

In summary, the minimum charge (lower bound) required to fail a critical column (i.e., Column 79) would have produced a pressure wave that would have broken windows on the north and east faces of the building near Column 79. The visual evidence did not show such a breakage pattern on any floor of WTC 7 as late as about 4:00 p.m. or above the 25th floor at the time of the building collapse initiation. Views of the northeast corner at the time of the collapse were obstructed by other buildings. The other scenarios considered would have required much more explosive material, which would have generated much more window breakage and a higher sound level, or were generally considered infeasible to carry out without detection.

Preparations for a blast scenario would have been almost impossible to carry out on any floor in the building without detection. While the selected blast scenario considered one column, demolition with explosive charges usually requires the preparation of many columns in a building. Preparations would have included removal of column enclosures or walls, use of weld torches to cut column sections, installation of charges, and placement of wires for detonation. Occupants, support staff, and visitors would have noticed evidence of such activities, particularly since they likely would have occurred around more than one column. It is highly doubtful that such activities would have not been detected.

Furthermore, for a shaped charge with an explosive weight equivalent to or higher than 9 lb (detonated in a single delay), the noise level at a distance of ½ mile would have been on the order of 130 dB to 140 dB,^{4,5} roughly equivalent to that of a thunderclap directly overhead or an adjacent jet engine. The sound blast in an urban setting would have propagated by being reflected and channeled down streets with minimum attenuation. The hard building exteriors would have acted as nearly perfect reflectors, with little to no absorption. The sound would have been attenuated behind buildings, but it would also generate multiple echoes. This could have extended the time period over which the sound could possibly have had an additive effect if multiple in-phase reflections met.⁴

People on the street would have heard 9 lb of RDX go off a mile away in air (and even further away if the wind were blowing in their direction).⁵ There were no witness reports of such a loud noise, nor was such a noise heard on audio tracks of video tapes that recorded the WTC 7 collapse. Thus, from this study, NIST concluded that blast events could not have occurred and found no evidence of any blast events.

8.9.3 Fires within the Con Edison Substation

NIST considered the possibility of fire in the Con Edison Substation (Chapter 2). Eyewitness accounts and off-site monitoring of the substation operation and alarm signals provided the basis for the assessment. Details are provided in Appendix A.

Con Edison employees were present at the substation when WTC 1 was impacted by the aircraft, and additional personnel were summoned to assist in dealing with the emergency. No fire or significant physical damage was noted prior to the time the substation building was evacuated at about 10:20 a.m. NIST found no evidence that significant physical damage to the Con Edison portion of WTC 7 occurred due to the collapse of WTC 1 at 10:29 a.m.

⁴ Email correspondence from Applied Research Associates to NIST, 31 July 2008.

⁵ Email correspondence from Loizeaux Group International to NIST, 5 August 2008.