

WTC Public Safety Studies

NIST World Trade Center Investigation

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*This Federal Investigation is
conducted under the authority of the
National Construction Safety Team Act (PL 107-231)*



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Objectives of the NIST Investigation

1. Why and how WTC 1, 2, and 7 collapsed following the initial impacts of the aircraft in WTC 1 and 2;
2. Explain fatalities by location, including all technical aspects of fire protection, occupant behavior, evacuation, and emergency response;
3. Determine procedures and practices used in the design, construction, operation, and maintenance of WTC 1, 2, and 7; and
4. Identify areas for improvement to building and fire practices, codes, and standards.

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Desired Outcomes

- **Make buildings safer**
- **Enhance safety of fire and emergency responders**
- **Better protect occupants and property in the future**
- **Better emergency response capabilities and procedures**

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Occupant Behavior, Egress, and Emergency Communications

To determine the behavior and fate of occupants and responders by collecting and analyzing information on:

- occupant behavior
- human factors
- egress
- emergency communications
- evacuation system

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Fire Service Technology and Guidelines

To build upon work already done by the Fire Department of New York (FDNY) and McKinsey & Company and:

- document what happened during the response by the fire services, up to the time of collapse of WTC 7
- identify issues in fire service practice, standards, and codes
- identify alternative practices/technologies
- identify R&D needs that advance fire service safety

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Methodology for First Person Accounts

- **Face-to-Face Interviews (~750)**
 - Designed to maximize accuracy, recall, and detail
- **Telephone Interviews (~800)**
 - Designed for statistical representativeness
- **Focus Groups (~15)**
 - Designed for in-depth study of specific issues

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Face-to-face Interviews

- **3 Step Process**

- **Uninterrupted description of the event**

- **Structured discussion to elicit sequence of actions**

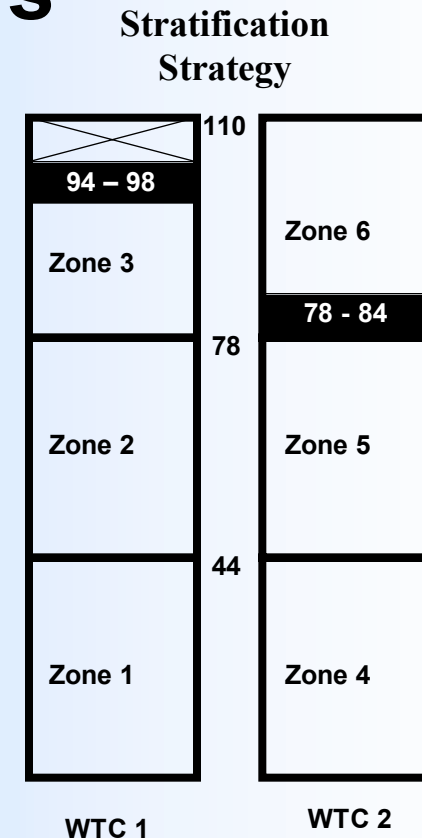
- **Follow-up questions**

- **Participants Include Occupants, First Responders, and Families**

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Telephone Interviews

- **Standardized Set of Questions**
- **Statistically representative population of occupants from WTC 1 and WTC 2**
- **Stratification Variables:**
 - **Initial Floor Population Density**
 - **Single/Multi-Tenant Floor**
 - **Floor Location**



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Focus Groups

- **Detailed Recall of Specific Group Experiences**
 - **5 Groups of ~10 Occupants of WTC 1, 2, or 7**
 - **10 groups of ~5 first responders
(a company or other similar group)**

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Timeline

Sept 2002	External experts on-board
Feb 2003	Survey methodology developed
April 2003	Survey contractor on-board
May 2003	Survey instruments developed and approved
June 2003	Survey field work initiated
Nov 2003	Survey field work completed
Jan 2004	Analysis of data collections complete
August 2004	NIST completes Investigation

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For More Information

- Web Site: <http://wtc.nist.gov>
- Email: wtc@nist.gov
- Regular Mail: WTC Technical Information Repository
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