

**Federal Building and Fire Safety Investigation
of the World Trade Center Disaster**

**Project #7: Occupant Behavior, Egress, and
Emergency Communications**

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Introduction

- One of the largest evacuation studies ever conducted
- Multidisciplinary approach is bridging knowledge and expertise in a new and innovative way
- Coordinated with other WTC studies in order to reduce respondent burden:
 - Columbia University
 - Centers for Disease Control and Prevention

Purpose

To document egress by gathering and analyzing information about:

- evacuation systems, emergency communications, and human factors, and
- occupant location, evacuation experience, and observed building conditions, and
- interaction between occupants, first responders, and the buildings.

Scope of Occupant Behavior, Evacuation, and Emergency Response Study

- **Occupant behavior and evacuation technologies and practices for tall buildings**
 - Decision-making and situation awareness
 - Time-constrained evacuation strategies (e.g., defend-in-place)
 - Role of floors wardens and fire safety directors
 - Issues concerning people with disabilities
 - Human factors issues and design of egress system
- **Firefighting technologies and practices for tall buildings**
 - Means for emergency access, time to reach affected floors
 - Firefighting versus evacuation
 - Physical condition of firefighter under high-rise work conditions
- **Command, control, and communication systems for emergency response**
 - Location of incident command post; mobilization, staging, and deployment; logistics; equipment; training; pre-event planning
 - Content and timing, among occupants and authorities, within and outside buildings, intra and inter group communications
- **Observations of fire/smoke conditions, structural damage, water flow, aircraft fuel**

Desired Outcomes

- Enhanced evacuation systems
- Enhanced safety of occupants

**Make all buildings safer
for occupants and first responders**

Collection of Occupant First Person Accounts

- Face-to-face Interviews
 - Up to 350 Occupants of WTC 1, 2, and 7
- Telephone Interviews
 - 800 Occupants of WTC 1 and 2
- Focus Group Interviews
 - 5 Focus Groups of ~10 People Each

Face-to-face Interviews

Objective: Document the evacuation of World Trade Center 1, 2, and 7 and collect observations and experiences relevant to the Investigation.

Universe: Individuals inside WTC 1, 2, or 7 on the morning of September 11, 2001 at the time of the first airplane impact

Face-to-face Interviews

Selected Groups

- People Near the Impact
- Persons with Building Responsibility
- Evacuees from the Lower and Middle Thirds of WTC 1 and 2
- Building 7 Evacuees
- Mobility Challenged
- People in Elevators or Lobbies
- Families of the Victims who Communicated After First Impact

Telephone Interviews

Objective: Generalize human behaviors and evacuation experiences of the occupants of World Trade Center 1 and 2

Universe: Individuals inside WTC 1 or 2 on the morning of September 11, 2001 at the time of the first airplane impact

Telephone Interviews

Sample Questions:

- I would like you to think about the time period between when you first became aware that something had happened to the World Trade Center and when you began your evacuation. During this time period, did you receive any additional information on what was going on?
- At any time during your evacuation did you leave this stairwell?
- Is there anything else you would like to say or let people know regarding your experience on September 11th?

Focus Group Interviews

Objective: Enhance recall of specific group experiences.

Selected Groups:

- Occupants Near the Floors of Impact
- Occupants Trapped in Elevators
- Occupants Above Floors of Impact
- Witnesses to Fireball in Lobby
- Other

Findings, Conclusions, and Recommendations

Compare and Analyze:

- Evacuation History
- Published Accounts
- Photographic and Electronic Data
- Data from First Person Accounts
- Egress and Emergency Communication System Design Records

Develop:

- Findings
- Conclusions
- Recommendations

Contact Information

- **Survivors, families, and retired first responders may volunteer to participate in the face-to-face interviews by contacting:**
877-221-7828 (toll free)
- **Alternatively, families of victims may volunteer to participate in the face-to-face interviews via the following web site:**
<https://wtc.nist.gov/family>
- **Anonymous tip line: 888-804-7581 (toll free)**
- Mail address: NIST World Trade Center Investigation Team
100 Bureau Drive, Stop 8610
Gaithersburg, MD 20899-8610
- E-mail: wtc@nist.gov
- Facsimile: 301-975-6122
- WTC web site: <http://wtc.nist.gov>