

## Special report

## Elevator mechanics left towers before buildings collapsed

By Dennis Cauchon  
USA TODAY

When the World Trade Center was bombed in 1993, Otis Elevator's mechanics led the rescue of 500 people trapped in elevators. Some mechanics were dropped onto the roofs of the twin towers by helicopter. Others, carrying 50-pound oxygen tanks on their backs, climbed through smoke to machine rooms high in the towers.

On Sept. 11, the elevator mechanics — many of the same men involved in the rescues in 1993 — left the buildings after the second

jet struck, nearly an hour before the first building collapsed.

The 83-person elevator crew worked for ACE Elevator, a small Palisades Park, N.J., company that won the maintenance contract from Otis in 1994.

At the time the elevator mechanics left, dozens of people were trapped in stuck elevators. Other people lost their lives trying to rescue those trapped in elevators, including a mechanic from another company who rushed to the Trade Center from down the street.

The departure of elevator mechanics from a disaster site is un-

usual. The industry takes pride in rescues. In the Oklahoma City bombing in 1995, elevator mechanics worked closely with the firefighters making rescues.

"Nobody knows the insides of a high-rise like an elevator mechanic. They act as guides for firefighters, in addition to working on elevators," says Robert Caporale, editor of *Elevator World*, a trade magazine.

In an interview, ACE Elevator President Ron Baamonde says the crewmembers left on their own because they were in danger. He says ACE followed the Trade Cen-

ter's emergency plan. After a jet hit the north tower, 81 crewmembers reported to the fire command station in the south tower lobby. Two reported by radio.

"We did a head count and were ready to deploy for rescue. The second plane hit. It was chaotic, people screaming and yelling," Baamonde says. "You couldn't get out the front door because debris was falling. There was a mass exodus through the underground of the complex."

The elevator crew joined the underground exodus. The south tower fell about 56 minutes later. Dur-

ing that time, firefighters and Port Authority workers struggled to free the trapped passengers.

The World Trade Center had 99 elevators in each tower. David Bobbitt, a Port Authority maintenance supervisor, made contact by intercom with about 75 elevators in the north tower. He says 10 elevators were stuck. "Some elevators had one or two people. Others had four or five," Bobbitt says.

"Some were very emotional, as you can imagine. I heard crying and screaming. Others were calm," Bobbitt says.

Elevators in the south tower

were more crowded. People were using them to evacuate, not knowing the second hijacked jet was on the way.

Bobbitt spoke to his counterpart in the south tower, Jim Barbella, five minutes before the building collapsed. Barbella, who died, reported that the stuck elevators included an express car with 19 people.

Baamonde says two ACE managers were trying to return to the building when it collapsed.

"Our people miraculously left when the second plane hit, and it saved our lives" Baamonde says.

## Safety steps taken after '93 bombing saved many lives at Trade Center

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USA TODAY spent two months finding out precisely what happened in the 1 hour, 42 minutes and 5 seconds from the first jet crash to the last building collapse. The newspaper identified where 95% of the victims worked or were located at the time of the attacks. In addition, it matched floor plans, architectural drawings and photographs to the accounts of survivors and victims.

The key findings:

► **The evacuation was a success.** Nearly everyone who could get out did get out. The Port Authority had revised its evacuation plan for the buildings after a terrorist bomb exploded in a Trade Center garage in 1993. On Sept. 11, those changes saved hundreds, possibly thousands, of lives. The buildings, sturdily constructed, exquisitely engineered and equipped with stairwells bigger than building codes require, stood just long enough to give potential survivors a chance to get out.

► **The number of dead was overestimated.** The actual death toll is about

2,800, including rescue workers and the 157 people on the two jets. The New York Police Department's official estimate has fallen from 6,659 on Sept. 24 to 3,011 on Dec. 18. It continues to decline as police remove duplicate and inaccurate missing-persons reports.

The initial estimates led to claims that Sept. 11 was the bloodiest day in U.S. history. According to USA TODAY's current count, the death toll from all four hijackings is 3,040, excluding the 19 hijackers. That's more than the 2,388 who died at Pearl Harbor on Dec. 7, 1941, but fewer than the 3,654 who died Sept. 17, 1862, in the Civil War battle at Antietam, Md.

► **The buildings were half-empty when the jets struck.** USA TODAY estimates 5,000 to 7,000 people were in each tower when the attack began. Earlier estimates ranged from 10,000 to 25,000 per tower. But company head counts show many desks were empty at 8:46 a.m. There were few tourists; the observation deck wasn't scheduled to open until 9:30 a.m.

► **Most of the dead were in the north tower, the first one hit and the second to collapse.** USA TODAY documented 1,434 who died in the north tower vs. 599 in the south tower. (Locations could not be determined for 147 of the building occupants.) An analysis shows that two-thirds of south tower occupants evacuated the upper floors during the 16½ minutes between the attacks. In the north tower, an average of 78 people died per floor at the crash area and above, compared with 19 people per floor in the south tower.

► **One stairway in the south tower remained open above the crash, but few used it to escape.** Stairway A, one of three, was unobstructed from top to bottom. The jet crashed into the 78th through 84th floors of the south tower. A few people escaped from the 78th floor down these stairs. One person went down the stairs from the 81st floor, two from the 84th floor and one from the 91st. Others went up these stairs in search of a helicopter rescue that wasn't possible because of heavy smoke on the rooftop.

► **Elevator mechanics left the buildings after the second jet hit.** Eighty-three mechanics from ACE Elevator of Palisades Park, N.J., left the buildings when the second jet hit. Dozens of people were trapped inside elevators at the time, according to the Port Authority. An elevator mechanic from another company rushed to the buildings from down the street and died trying to rescue people.

## A complex drama

The unscripted drama inside the World Trade Center is a complex story. It involved 10,000 to 15,000 people spread over 200 acres of floor space inside two buildings. There were 99 elevators and three stairwells in each building. Ten bystanders were killed outside by falling debris.

Columbia University scientists recorded the precise time of the

attacks on a seismograph connected to an atomic clock. The north tower was struck at 8:46:26 a.m., two to five minutes earlier than in most accounts. The impact registered magnitude-0.9 on the seismograph, equal to a small earthquake. The south tower was hit at 9:02:54 a.m.

The south tower collapsed first, at 9:59:04 a.m. The north tower fell at 10:28:31 a.m.

Nearly everyone's fate inside the two 110-story towers was sealed the moment the jets hit.

In the north tower, American Airlines Flight 11 struck the 93rd through 98th floors and wrecked the stairwells on the 92nd floor. At the crash and above, 1,360 people died; none survived. Below the crash line, 72 died and more than 4,000 survived. Floors could not be determined for two people who died in the north tower.

In the south tower, United Airlines Flight 175 struck the 78th through 84th floors. The higher wing cut into the offices of Euro Brokers, a financial trading firm. The fuselage tore into Fuji Bank offices on the 79th through 82nd floors.

Of 599 fatalities in the south tower, only four worked below the crash area. Nobody who worked on the 58th floor or lower is known to have died.

Although the official death toll stayed above 4,000 until Nov. 19, the inaccuracy of the estimates became apparent just days after the attack. All major companies with employees in the towers estimated the number of missing and presumed dead within 48 hours of the attacks, and their estimates were far lower than police figures.

Morgan Stanley, the largest tenant in the World Trade Center, occupied 21 floors in the south tower between the 43rd and 74th floors. Of 2,500 employees who worked in the building, only six died, including three security officials who stayed to evacuate the building.

Empire Blue Cross Blue Shield, the second-largest tenant, occupied 10 floors in the north tower between the 17th and 31st floors. All but nine of its 1,900 employees survived.

"The evacuation was a remarkable success story," says Jake Pauls, a safety consultant who is the nation's leading expert on stairway design and safety.

## Design aided escape

That evacuation began on the drawing board.

The World Trade Center had an excellent stair system, much better than required by building codes — both when it was built 30 years ago and now. Each tower had three stairwells. New York City building codes require two.

Stairways A and C, on opposite sides of the building's core, were 44 inches wide. In the center, Stairway B was 56 inches wide.

The bigger the stairway, the faster an evacuation can proceed. In 44-inch stairways, a person must turn sideways to let another pass — for example, a rescuer heading up. In a 56-inch stairway, two people can pass comfortably.

The World Trade Center stairwells allowed thousands to get out despite panic and smoke.

## Lessons learned from terrorists

On Feb. 26, 1993, terrorists exploded a bomb in a parking garage under the north tower. Six people died. The evacuation took nearly four hours in dark, smoky, poorly marked stairwells. Some people were stuck in elevators for 10 hours. The Port Authority made crucial improvements after that attack. The changes saved countless lives on Sept. 11.

The Port Authority put reflective paint on stairs, railings and stairwell doors. It added bright arrows to guide people along corridors to stairway connections. It installed loudspeakers so building managers could talk to people in their offices as well as in hallways. It gave every disabled person an evacuation chair that would let two husky men carry them down stairs. One evacuation chair was used to carry a man down from the 67th floor.

In the 1993 attack, the explosion knocked out the main power source, its backup and the fire-control command post. The Port Authority added a second source of power for safety equipment, such as fire alarms, emergency



By Jerry Torrens, AP

**Destruction:** The World Trade Center's south tower collapses on the morning of Sept. 11. Two-thirds of the people on the south tower's upper floors evacuated before the building was hit by the second hijacked jet.

lighting and intercoms. It built two duplicate fire command posts, one in each tower. The Port Authority also put batteries in stairwell lights so a power failure wouldn't blacken the escape route. Overall, the improvements cost more than \$90 million. Sprinklers, added before 1993, helped suppress fires. Most important, building man-

agement took evacuations seriously. Evacuation drills were held every six months, sometimes to the irritation or amusement of occupants. Each floor had "fire wardens," sometimes high-ranking executives of a tenant, and they were responsible for organizing an evacuation on their floors.

"They had done a great job,"

says Brian Clark, a fire warden and executive vice president of Euro Brokers, located on the 84th floor of the south tower. "People knew where the stairs were."

## Not fully occupied

The World Trade Center was only half-full when the first jet

struck, at 8:46 a.m. That took pressure off the stairwells.

Previous estimates of the number of people in each building ranged from 10,000 to 25,000. USA TODAY found that the actual number appears to have been between 5,000 and 7,000 per tower.

Many companies did head counts after the attack to determine how many employees had been in the buildings. Although a complete accounting is not possible, counts from more than 50 floors indicate the buildings were barely half full.

For example, Marsh & McLennan, an insurance company, had offices on the 93rd through 100th floors in the north tower. About 1,000 worked there; 295 were at work at the time. All died. Fred Alger Management, a money manager, occupied most of the 93rd floor. Thirty-five of 55 employees were in. They all died.

Only 25 of 55 employees were in the New York Metro Transportation Council's 82nd floor office. Three died. The receptionist was the only person in the office at the 16-employee law firm of Drinker Biddle & Reath on the 89th floor. She lived.

Several factors kept desks empty. Some people voted that morning in New York City's mayoral primary. Others took children to the first day of school. Some were on sales calls or business trips. But the biggest factor was the early hour: Many simply hadn't arrived by 8:46 a.m.

Many floors in the two 110-floor buildings were not occupied.

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