

The World Trade Center had one of the world's great elevator systems — 198 of the biggest, fastest elevators ever built. On the morning of Sept. 11, this technological marvel turned against the people who worked there. USA TODAY estimates that at least 200 people died inside World Trade Center elevators, the biggest elevator catastrophe in history. Some people plunged to their deaths after elevator cables were destroyed by the hijacked jets that crashed into the buildings. Others burned to death as flames shot down shafts. And some who were trapped inside stalled elevators died when the buildings collapsed.



Battalion  
Chief Joseph  
Pfeifer  
works at a  
command  
post in the  
north tower  
lobby, in  
this photo  
from the  
CBS  
documentary  
9/11. The  
elevators in  
the  
background  
were not  
checked.  
CBS

The elevators were a tragic exception to an otherwise successful evacuation that resulted in the survival of 99% of the people who worked below the floors where the jets crashed.

USA TODAY has identified 21 people who were trapped behind locked elevator doors and fought their way out. About 80 other people in elevators survived because the doors happened to be open just as the jets hit or opened automatically without the assistance of passengers.

USA TODAY could not find an instance in which emergency workers successfully rescued people from elevators, although some firefighters died trying.

Poor communications among rescue workers meant elevators were ignored even after trapped passengers used intercoms to report their locations, sometimes only a few feet from firefighters. Most passengers could not save themselves: Safety devices designed to prevent people from falling down shafts locked people inside elevators the moment the elevators malfunctioned.

And when the second jet hit the south tower at 9:03 a.m., 16½ minutes after the attack on the north tower, the World Trade Center's elevator mechanics decided to leave the buildings. They expected to return later to help firefighters but never did.

In one way, the elevators played a heroic role that morning. They helped thousands evacuate the south tower before the second jet hit. But the elevator shafts also became the circulation system of the disaster, carrying death and destruction throughout the towers.

Elevator shafts worked like chimneys, funneling unbearable smoke to floors above the crashes. The shafts also channeled burning jet fuel throughout both towers. Fire moved not only up and down but also side to side, from shaft to shaft, unleashing explosions in elevator lobbies and in restrooms next to the shafts.

USA TODAY made an intensive effort over the past six months to determine what happened to the World Trade Center elevators. Reporters interviewed more than 50 people who were in elevators at the time the jets hit or moments before. The newspaper also reviewed 2,500 pages of accounts written by survivors and reports in other media outlets, examined architectural plans and spoke to elevator experts and mechanics who worked at the Trade Center.

The result is the first in-depth look at an important but neglected part of the World Trade Center disaster.

USA TODAY found:

- **Newly installed safety devices condemned many people to death.**

To comply with building codes, the World Trade Center since 1996 had been adding locks that made it impossible for passengers to force open the doors of stalled elevators. These locks, called "door restrictors," had been added to about half of the 198 elevators in the twin towers. Nobody is known to have escaped from an elevator locked by a door restrictor. The World Trade Center followed a long-established approach to elevator rescues: Leave people inside stalled elevators until professionals can perform rescues. The elevators had three mechanisms, including the restrictors, designed to prevent people from accidentally falling down elevator shafts. An untold number were still trapped when the buildings collapsed.

- **Few elevators performed properly. Most elevators, even those on low floors, stopped functioning the moment the jets hit.**

In a fire emergency, an elevator is programmed to return to its lowest floor and hold its doors open. On Sept. 11, many elevators far below the crash zones failed to do this, although they continued to have electrical power. The reason for this failure is unclear. Some elevators returned to their lowest floors but didn't open. That made it hard for firefighters to know whether elevators had returned to lobby floors or were stalled somewhere higher. The doors of nearly 50 elevator in the north lobby alone were closed.

- **Elevators were not systematically checked for trapped passengers.**

Firefighters failed to inspect elevators with closed doors, even those closest to the command post in the north tower lobby. Eight passengers escaped from these elevators on their own; one man did so just five minutes before the building collapsed.

- **Elevator mechanics left the buildings.**

Eighty elevator mechanics were on duty in the towers that morning, many just a few steps from people who needed rescue. However, the mechanics, fearing for their safety, evacuated on their own initiative when the south tower was struck at 9:03 a.m. A supervisor from the Port Authority of New York and New Jersey, which owned the World Trade Center, radioed the mechanics about 45 minutes later to say firefighters needed their help. The south tower collapsed as two supervisors were on their way back.

### **The revolutionary elevators**

Elevators are the safest form of mechanized travel when measured by trips taken: Only about a dozen passengers die in 200 billion trips made annually in 600,000 elevators in the USA. Most deaths are caused by falling down shafts.

Despite common fears, only once before had a passenger elevator had all its cables severed and fallen to the ground, according to *Elevator World*. That happened in 1945 when an elevator fell 78 stories after a military plane hit the Empire State Building. The woman inside lived.

Before Sept. 11, the World Trade Center had never had an elevator fatality, even though each express elevator might travel 60,000 miles a year. Although 30 years old, the system remained a worldwide tourist attraction for people in the elevator industry. Trade publications wrote about the elevators with a romanticism never bestowed on the taller Sears Tower in Chicago or other skyscrapers.

The World Trade Center elevator system had a revolutionary design that made it possible to build 110-story towers. The elevators were big and fast and used far less floor space than earlier designs. The elevator system was the first to require people to take two elevators to reach most upper floors.

Passengers took non-stop express elevators from the ground floor to elevator lobbies on the 44th and 78th floors. There, they walked across a hall to smaller local elevators that went to higher floors. It could take five minutes to get from the ground floor lobby to the 105th floor.

Each tower had only two passenger elevators that went non-stop from bottom to top — to the Windows on the World restaurant in the north tower and the observation deck in the south tower.

The big benefit was economic. Until the World Trade Center, the height of skyscrapers had been limited by the space needed for elevators that went from the lobby to every floor. By requiring transfers, the World Trade Center cut in half the number of elevator shafts needed, so more floor space could be leased.

### **Safety locks trapped passengers**

On Sept. 11, elevators in the World Trade Center failed in a number of ways. Most came to a stop after their tower was hit.

Elevator doors were nearly impossible to open unless a car was within 18 inches of a floor landing. Often, the elevator had to be within 3 inches of a landing before all door locking mechanisms would release. The twin towers had 15 miles of elevator shafts. But only 1.1 miles were within 18 inches of a landing. The odds of being near a landing were not good.

To get out of an elevator, a passenger had to pass through two doors and be near a landing. The inside door was attached to the elevator car itself. The outside door was part of the building, keeping people in hallways from stepping into an elevator shaft. A motor on the elevator car roof opened both doors simultaneously when the elevator reached a landing. People stuck inside elevators had to contend with locks on both sets of doors.

The elevators at the World Trade Center trapped people three ways:

- Door restrictors dropped a steel rod, like a deadbolt, into the mechanism that opened the elevator's doors. The lock was activated when a properly working elevator left a landing. If the elevator stopped suddenly or lost power, the restrictor made it impossible to open the inside door more than 4 inches. The lock could be released — and the doors opened fully — only from the elevator car's roof.
- On all elevators, both those with and those without door restrictors, pressure from the motors kept doors closed until elevator cars were near a landing. Several strong men could overpower these motors. A loss of electrical power also could free the doors.
- All of the outside or hallway doors had locks called "interlocks" that prevented opening the doors. This made it difficult for bystanders to help people stuck in elevators. But it was possible for people in an elevator to release this lock, if they had been able to open the inside car door first. The release mechanism for the interlocks was on the shaft side of the door.

Door restrictors proved the most deadly of the three locking devices. In elevators without door restrictors, a few people managed to overcome the other two locks. In two cases, people escaped from elevators whose doors were shut by doorway motors. In another case, passengers overcame the interlock on the hallway doors indirectly by using wire cutters to cut a cable that held the doors shut.

### **The debate over door restrictors**

The door restrictors the Port Authority had added to half of the elevators in the World Trade Center cost about \$400 each. Called the HatchLatch, the restrictor could be released only from the roof of the elevator car. That usually required an elevator mechanic to descend the shaft from above.

"HatchLatch says 'No Exit!' " declares its manufacturer, Adams Elevator of Niles, Ill., in its catalog.

Unlike the HatchLatch, other brands of door restrictors can be opened from the hall outside a stalled elevator and do not require access to the car roof. The Port Authority considered buying these easy-access restrictors, but none fit the World Trade Center

elevators when the renovation work began, says Thomas Stack, a former elevator consultant at the twin towers.

The World Trade Center's elevator staff had disagreed over whether restrictors should be installed at all. Some said the locks were not appropriate for a building vulnerable to terrorism. They remembered the 1993 truck bombing that trapped some people inside Trade Center elevators for 10 hours.

"I fought restrictors for two years," says Alan Forziati Sr., who was the safety engineer responsible for elevators until he retired in December 2000. "If we had had these restrictors in 1993, God knows what would have happened. It may be dangerous to get out of an elevator, but when you're trapped inside during a disaster, you need that option."

Dave Bobbitt, an elevator supervisor at the World Trade Center for the Port Authority, says it was a difficult decision. Several years ago, a friend of Bobbitt's had plunged to his death in another high-rise while trying to escape from an elevator. "He opted not to wait for a mechanic, and it cost him his life," Bobbitt says. "On the other hand, there are good arguments against door restrictors."

On Sept. 11, door restrictors may have cost a colleague his life. Anthony Savas, 72, a construction inspector for the Port Authority, was trapped in an elevator at the 78th floor elevator lobby of the north tower when the nose of the first jet struck the building 18 floors above. He pounded his fists on the doors.

Nearby, Keith Meerholz, 35, an insurance executive at Marsh & McLennan had been knocked down and burned by fire shooting the crack in an elevator door. He heard Savas banging from inside the elevator.

The 6-foot-2, 260-pound Meerholz and another man tried to force open the elevator doors with their hands. The doors opened just 2 inches. Inside, Meerholz saw Savas, white-haired, calm, unhurt, wearing a uniform and holding a walkie-talkie. Savas said he had radioed for help.

A few minutes later, three Port Authority colleagues came upon Savas. Two of the men sat back-to-back, put their feet in the 2-inch crack and pushed. The door would not budge. Savas told his colleagues to move on, that firefighters would rescue him later. Savas did not survive.

### **Elevators plunged**

USA TODAY based its estimate of at least 200 dying in elevators on interviews with survivors, victims' families and emergency personnel, as well as photographs, videos and architectural plans. The information was analyzed in a database. The death toll could have been as high as 400, although the exact number of deaths cannot be known with certainty.

Most deaths occurred in the express elevators in both towers that went from the lobbies to the 78th floors and in the elevators near the top floors of the buildings.

Sixty-four of the twin towers' 198 elevators had cables that ran through the floors devastated by the hijacked hijacked planes, and the cables were likely destroyed.

Forty-eight of these 64 elevators had no known survivors. Even in the elevators where people escaped — mostly because the doors happened to be open at the moment of impact — they left behind a large number of people who were burned to death or were killed when the buildings collapsed.

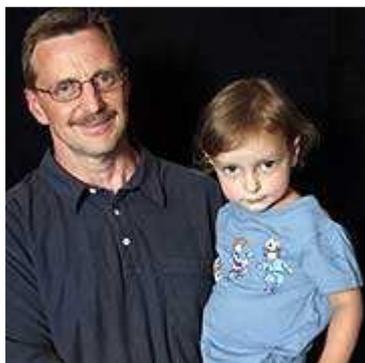
The loss of life was almost complete inside the south tower's 10 giant express elevators, which were shuttling evacuees from the 78th floor to the ground floor after the north tower was hit. Only four people survived.

The four survivors — two each from adjacent elevators — were in elevators that plunged and were stopped by the emergency brakes 6 to 10 feet above the lobby floor. About 40 people died in those two elevators. Doomed passengers called loved ones from two other south tower express elevators stuck near the 12th floor in one case and the 19th floor in another.

The express elevators in the north tower had eight survivors in two elevators. In the other eight express elevators, nobody is known to have lived.

People who escaped from elevators high in the buildings saw people left behind burn to death and some elevators plunge to the ground.

Gerry Wertz, a human resources executive at Marsh & McLennan, was in a north tower elevator when it stopped on the 91st floor. The only other passenger, artist Vanessa Lawrence, got out.



By Todd Plitt, USA TODAY

**Gerry Wertz:** With daughter Rylan, 2. He jumped out of an elevator as it disintegrated in flames.

Waizer survived with burns over 40% of his body. He walked the rest of the way down.

"She was stepping off the elevator when the plane hit," Wertz recalls. "There was an explosion on top of the elevator as if someone had thrown a hand grenade. I jumped out, fell to the floor and looked behind me. I saw the elevator disintegrate in a ball of flames and fall down (the shaft). There was a big hole in the ceiling above the elevator. I saw the cables fold up as if they'd become detached. It took no more than two seconds."

That empty elevator probably plummeted 14 floors into a pit on the 77th floor. Wertz and Lawrence evacuated safely down the stairs, as did 18 other people from the 91st floor.

Cantor Fitzgerald tax lawyer Harry Waizer, 50, was alone in a burning elevator that performed as it was programmed to do in an emergency: It returned to its lowest floor — the 78th — and opened its doors.

### **Why elevator rescues failed**

On Sept. 11, people fought their own way out of elevators or they died. USA TODAY could not locate any professional rescues of people stuck in elevators. The Fire Department of New York and the Port Authority also could not cite successful rescues.

Rescue attempts were underway when the buildings collapsed. Firefighters from Ladder 4 and Engine 54 — which shared a firehouse at 48th Street and Eighth Avenue — used the Jaws of Life tool to rescue people trapped in an elevator in the south tower lobby. The firefighters died when the tower collapsed at 9:59 a.m. Their bodies were found near an elevator and their Jaws of Life.

The elevator rescue effort was run from a fire safety desk in each lobby. Consoles digitally showed the location of every elevator. The fire safety desks also had an intercom system to speak to people inside the elevators. The fire department had set up command posts next to the fire safety desks.

In each tower, a Port Authority supervisor tried to make contact with each elevator.

Bobbitt, the Port Authority supervisor contacting elevators in the north tower, says he spoke to people in about 10 stalled elevators. He contacted about 75 of the 99 elevators in the north tower before the other tower collapsed and he evacuated. Bobbitt could not contact about 20 elevators located above the 78th floor. The console showed no reading for those elevators, suggesting they were most likely destroyed.

When Bobbitt located people trapped in an elevator, a colleague, Don Parente, wrote down the elevator number and its location. "We found out the information and gave it to the firemen," Bobbitt says. "A couple different firemen grabbed a couple different lists, but I don't know what happened after that."

For reasons that are unclear, even the easiest rescues — releasing people trapped in elevators in the ground floor lobby — were not attempted. For example, Chris Young, a 33-year-old temporary worker, escaped on his own a few feet from the fire department's command post in the north tower just five minutes before the building collapsed. He had twice reported his location via intercom. And passengers who escaped from an adjacent elevator told firefighters they had spoken to the trapped man. He was able to open the doors only when the power failed and the motor holding the doors shut stopped working.

### **Elevator mechanics left**

On Sept. 11, ACE Elevator of Palisades Park, N.J., had 80 elevator mechanics inside the World Trade Center.

Following the Port Authority's emergency plan, after the first jet hit the north tower, elevator mechanics from both towers reported to the fire safety desk in the south tower lobby for instructions from police or firefighters. About 60 mechanics had arrived in the south tower lobby and others were in radio contact when the second jet struck that building.

"We were standing there trying to count heads when the second plane hit (the south tower)," said Peter Niederau, ACE Elevator's supervisor of the modernization project. "Parts of the lobby and glass were coming down around us, so we all got out of the lobby as fast as we could."

They left in different directions. Some went through the underground shopping mall. Others went out onto Liberty Street. Had they stayed, they would have been about 30 yards from the two express elevators where firefighters tried unsuccessfully to save people. Another mechanic was in the north tower's 78th floor elevator lobby — where Savas and other people were trapped — when the first jet hit. The mechanic was knocked across the lobby, then evacuated safely, the ACE Elevator supervisors say.

"(We) went out to the street to assess the damage and come back in as needed," says James O'Neill, ACE Elevator's supervisor of maintenance. The plan was to return to the building later in the day to help with rescues. The strategy had worked after the 1993 terrorist bombing, when many of the same mechanics — working for Otis Elevator, which had the contract then — were hailed as heroes.

On Sept. 11, the mechanics left on their own, without instructions from police or fire officials. ACE Elevator supervisors say this was consistent with the emergency plan. All the mechanics survived. "We had a procedure. We had a procedure to follow, and they (the mechanics) followed it," Niederau says.

But the Port Authority says the emergency plan called for mechanics to stay and help with rescues. "The manuals consider many emergency scenarios and describe the role of the mechanics in detail in responding to them," Port Authority spokesman Allen Morrison says. "There was no situation in which the mechanics were advised or instructed to leave on their own. They were, depending on the situation, to be dispatched to various emergency posts or to respond to various passenger entrapments and to assist police, fire and other rescue personnel."

About 9:45 a.m., from the south tower lobby, Port Authority elevator manager Joseph Amatuccio radioed the ACE Elevator supervisors on their private radio channel. O'Neill recalls him asking: "Can you mobilize to come inside and see what's going on? Because I'm here with the fire department, and they're asking me questions I don't know."

O'Neill radioed John Menville, an ACE Elevator supervisor trained in rescues, and both tried to get back in the building. The supervisors had special ID badges with red stripes that allowed them behind police lines. The badges had been issued after the 1993 bombing.

As Menville approached, the south tower collapsed. Amatuccio and his colleagues were killed. Bobbitt and other firefighters began evacuating the soon-to-collapse north tower.

The elevator rescue effort was over.

*Data analysis by Paul Overberg. Contributing: Staci George and Nafeesa Syeed*

