

NEWSDAY, WEDNESDAY OCTOBER 31, 2001

Disaster Foreshadowed

Deputy warned of high-rise fires in 1995 article

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In a high-rise building fire, elevators stall or shut down. Fire radios don't function above a certain floor. Fire ladders are too short. Civilians jump to their deaths. Air-conditioning ducts allow the fire to spread.

In short, it is extremely difficult to fight a major high-rise fire, particularly one on the upper floors.

These conclusions aren't from a report issued since the attack on the World Trade Center. Rather, they were written six years ago by Vincent Dunn, a deputy chief in the New York Fire Department. The 1995 article on high-rise fires in general, which appeared in *Fire Engineering* magazine, illustrated many of the problems confronted by firefighters six years later on Sept. 11.

Dunn, a nationally respected expert on high-rise fires who retired recently after 42 years, also included a warning.

"After fighting high-rise fires in midtown Manhattan, New York City, for the past 10 years, it is my opinion that the fire service has been lucky," he wrote. "Despite the limitations in fighting high-rise fires, we have not had a great loss of life or another multifloor high-rise fire."

In an interview yesterday, Dunn of Queens said there is nothing wrong with Fire Department tactics in high-rise fires, but he believes firefighter communications in such buildings can be improved and manpower can be added to units in high-rise districts. He also said a lighter weight oxygen mask needs to be developed.

"High-rise fires are the biggest challenge in the fire service," he said.

As for buildings, Dunn said elevators need to be more reliable, and interior antennas should be added to improve radio transmissions.

"The building owners have to prove to their occupants that their buildings are safe," Dunn said yesterday. "No fire safety director is going to be too influential. We have to get the confidence of the people back."

Since Sept. 11, fire department officials have said they are re-examining how to fight high-rise fires. The collapses of the Twin Towers have also generated debates in recent weeks over whether to rebuild the enormous structures and how to apply lessons of Sept. 11 in new construction.

John Jay College professor Glenn Corbett, of the Division of Fire Science, has called for a blue ribbon panel to examine the events of Sept. 11 for future lessons. "What's needed is an over-arching commission to coordinate all those activities and see where the gaps are," said Corbett, the technical editor at *Fire Engineering* magazine.

According to Dunn's 1995 article, high-rise buildings contain many barriers to effectively fighting a large-scale fire.

A major problem, Dunn said, is the time it takes to reach the floors containing the fire. "The long reflex time — the duration of time from receipt of the alarm until the first hose team discharges water on the fire — in a high-rise building allows the flames to spread beyond firefighters' control," he wrote.

Because the buildings are too tall for ladders, firefighters are prevented from fighting the fire from the outside or making exterior rescues, he stated.

Civilians jump, as happened Sept. 11.

"People trapped in a burning high-rise building who cannot be reached by your highest ladder will leap to their deaths, attempt to climb down knotted bedsheets and fall, scribble notes telling where they are trapped and drop them from smoky windows, or have their last cries for help recorded on fire department's patchers' telephones," Dunn wrote in 1995.



High-Rise Horror

Many of the problems firefighters faced Sept. 11 at the World Trade Center were foreshadowed in a 1995 article on the challenges of high-rise fires by retired FDNY Deputy Chief Vincent Dunn.

RESTRICTED ACCESS

Because the buildings are too tall for the use of ladders, firefighters are prevented from fighting the fire from the outside or making exterior rescues.

TRAPPED VICTIMS

Civilians isolated on burning floors will jump. At the Trade Center, even helicopter rescues from the roof proved to be impossible.

COMMUNICATION BREAKDOWN

Tests showed radios could transmit only as high as the 65th floor. When the Twin Towers collapsed, equipment designed to strengthen radio signals was crushed along with the vehicles it was transported on.

ELEVATOR ISSUES

Elevators often shut down, stall or malfunction, due to heat, flooding or structural failure. On Sept. 11, survivors reported that elevators were stuck throughout the towers.

SPREADING FLAMES

Central air-conditioning systems and elevator shafts provide routes for flames to spread. After the planes slammed into the towers, flaming jet fuel cascaded down the shafts and scorched the lobby.

Newsday Photo / Jiro Ose

Newsday / Justin Guber

Among some of Dunn's other findings in his article:

- The structural steel of a high-rise interferes with fire radio communication. Dunn cited tests conducted in the World Trade Center and the 102-story Empire State Building, which showed radios could transmit only to the 65th floor.

- The large, open floor areas of high-rises allow fires to spread faster. "The best-kept secret in America's fire service is that firefighters cannot extinguish a fire in a 20- or 30-thousand-square-foot open floor area in a high-rise building," Dunn wrote.

- Elevators often shut down, stall or malfunction, due to heat, flooding or structural failure. He cited an eight-year study, which found that the elevators failed at 59 of 179 major fires.

- Central air-conditioning systems and elevator shafts provide tubes for the fire to spread through the building. "Ducts, shafts and poke-through holes penetrate fire-resistive floors, walls and ceilings."

According to Dunn, the standard strategy in fighting a high-rise fire, known as "defend in place," isn't effective. He defines the strategy as fighting the fire while the building occupants remain stationary.

Civilians, he said, will not remain at their desks. He cited the 1993 World Trade Center bombing, in which the occupants evacuated on their own after the building communication system was damaged.

"One of the lessons learned at this fire, as stated in the chief of department's postfire analysis, was that the 'defend-in-place' strategy does not exist," Dunn wrote.

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