Three people died in a fire in this 600-room luxury resort hotel. Fuels for the fire were the contents — mattresses, box springs, carpets — of rooms on a portion of the sixth floor. Those contents had been temporarily stored in the corridor of a section of the sixth floor that was undergoing redecoration.

At the time of the hotel fire, there were civil disturbances in Bermuda that resulted in simultaneous fires. This meant that fewer fire fighters were available to fight the hotel fire than would normally have been the case. The hotel's own private fire brigade, however, assisted the public brigade in containing the fire and preventing further loss of life.

Built in the early 1970s, the Southampton Princess Hotel was a modern, luxury resort hotel in Bermuda's Southampton Parish. The building was T-shaped and had six guest floors; however, the ground floor and the land contour made the building much higher than the six floors would indicate. The basic building construction was metal frame with spray-on fireproofing on columns and main beams, and membrane protection for steel bar joists supporting the roof and floors. The fireproofing was designed to qualify the building as fire-resistive construction.

The corridor walls extended from slab to slab and consisted of ¾-inch gypsumboard on each side of 2½-inch metal studs placed 24 inches on center with insulation between the gypsumboard. The ceilings on the sixth floor (floor of fire origin) were suspended below the bar.
joist of the roof on metal hangers and consisted of \( \frac{3}{4} \)-inch gyspsum board attached to the metal hangers. Doors to the sleeping rooms were of 1\( \frac{1}{4} \)-inch solid bonded, core wood with self-closing devices.

The roof construction consisted of a built-up roof on two inches of rigid insulation on 2\( \frac{1}{2} \) inches of concrete on steel deck supported by steel bar joists.

Heating and air conditioning were provided to the guest rooms by chilled and heated water pumped to units located in the ceiling of each room. These units recirculated air within the rooms and did not provide any fresh air. Ventilation was provided by doors to the individual balconies for each room, as well as by a 40-cfm (cubic feet per minute) bathroom vent in each unit. Fresh air was pumped into each corridor. Makeup air for the rooms and exhaust for the corridor fresh-air supply was provided by seepage. There was no substantial undercut to the corridor doors.

Fire protection equipment in the facility consisted of hose reels located throughout the corridors, plus standpipe outlets for fire department use. A heat detection system was provided, with detectors located in such areas as maids' closets, storage areas, and other hazardous locations. Manual pull stations were located throughout the building, and activation of any of the heat detectors or the manual pull stations would result in a presignal alarm at the hotel telephone operator's station and in the hotel's engineering office. Employee action was necessary to change the presignal to a general alarm signal. There was no direct connection of the alarm system to the fire department. Water for fire fighting as well as for domestic purposes was provided by a substantial tank located on the premises. (At no time during the fire was the water supply a problem.) Complete automatic sprinkler protection had not been provided.

In the corridors, the walls had a vinyl covering, the ceilings were painted, and the floors were covered with a short-pile carpeting on a jute-and-rubber pad.

The north wing of the sixth floor, which was not undergoing redecoration, was occupied at the time of the fire. The east and west wings of that floor were being redecorated, and were not occupied. During the redecoration, all small furniture from the guest rooms had been placed in the bathroom and separate dressing areas in each room. The mattresses and box springs had been put in the corridor. Some rooms had divans, which were also removed and placed in the corridor. The carpeting in the rooms had been folded, rolled up, and put in the cor-
The west end of the sixth-floor corridor, looking east. Note mattresses, rolled-up carpeting, and box springs in corridor.

Damage in north wing of the sixth floor.

The corridor; the rug underlayment had been left in the rooms. The mattresses were of the innerspring type, covered with a thin layer of foam plastic, then a layer of cotton, and another layer of foam plastic, topped by a fabric cover. The box springs consisted of a wood frame and metal springs, with a fabric cover. The divans had cloth-covered foam plastic cushions. All of this material in the corridor resulted in an unusual and much higher fuel load in this area.

The hotel's Emergency Procedures Coordinator had established emergency staff training by holding periodic one-hour compulsory sessions for all staff members. These sessions coordinated with the hotel's emergency manual, which covered all forms of emergencies. Since a serious time delay occurred from the time of fire alarm to the arrival of the Hamilton Fire Brigade, due to road conditions and the distance of the hotel from fire brigade quarters, the hotel had established a private fire brigade that was trained by the public fire brigade and the hotel's Emergency Procedures Coordinator. The private brigade, which consisted of approximately 25 people, was intended to contain the fire until the arrival of the public fire brigade. Specific hotel individuals were given responsibility for evacuation of guests.

The Fire

On the night of December 1, 1977, there were approximately 650 people in the hotel. Shortly before 11:30 pm, a hotel employee saw smoke on the second floor. He immediately notified the telephone operator, who also received simultaneous notification over the alarm panel that there was a fire on the sixth floor. The first employee then went to the sixth floor and discovered a working fire in the east and west wings, and ordered the hotel evacuated. The evacuation alarm was sounded. The Hamilton Fire Brigade received notification of the fire at 11:29 pm and immediately responded with four pieces of apparatus and 20 men.

Members of the hotel's fire brigade started evacuating guests down the stairways before the arrival of the public brigade. They also laid out hoselines on the fifth floor.
Upon the arrival of the Hamilton Fire Brigade, the hotel's Emergency Procedures Coordinator briefed the senior fire officer.

All initial efforts were directed at rescuing people from the north wing of the sixth floor. Some guests were escorted out of the hotel by the fire brigades before conditions became untenable due to heat and smoke. At this point, many of the guests were trapped on their balconies, and members of both fire brigades stayed on the balconies with them to keep them calm and reassured. When the fire was finally out, they escorted those occupants out of the building.

By 3:00 am the public fire brigade had the fire under control, having extinguished it with interior hand lines. The three fatalities were located on the fire floor: an elderly couple, found in the elevator lobby, and a building engineer, found in the east wing between the service elevator and the extreme east stairway. A total of seven pieces of apparatus and approximately 35 men were utilized at the fire.¹

¹ It should be noted that total manpower available to the Hamilton Fire Brigade was 80 men, and at the same time that the Southampton Princess fire occurred, there were four other major fires on the island because of the civil disturbances.

Discussion

The fire, suspected to be incendiary, appears to have originated in multiple locations along the east-west corridor of the sixth floor, in materials temporarily stored in the corridor, and was essentially confined to the corridors on the sixth floor. According to local officials, the fire was deliberately set.

The ceiling throughout almost the entire length of the east-west corridors had fallen, and in many areas the bar joists above it had been deformed. There was no apparent deformation of major structural members.

The 1 3/4-inch solid bonded core wood doors to the guest rooms had withstood the prolonged exposure to fire very well. In only a few areas had the doors burned through, and in those areas it was obvious that this had occurred near the end of the fire and had resulted in slight damage to the guest room.

What appear to be smokestop doors in the north wing in Figure 1 were actually security doors used to close off the north wing, which was unused when the hotel was first built. These doors were open during the fire.

There were no fatalities or major injuries among guests who had stayed in their rooms. It is theorized that the elderly couple found in the elevator lobby on the

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sixth floor had come up from a lower floor in the elevator to check on relatives staying on that floor. The location of their bodies indicates that they had stepped off the elevator and were able to walk only a few paces before they were overcome by heat and smoke. The building engineer had apparently come up on the service elevator from the engineering office after hearing the alarm there, and had started to head toward the extreme east stairway when he was overcome.

This fire demonstrates the need to be aware of and control fire hazards created during redecoration of buildings, especially when the buildings will be occupied during the redecoration. In this case, the contents of rooms in the area being redecorated could have been stored out of the hotel. The fire also demonstrated that even under prolonged and heavier fire loading than anticipated, the existing standards (NFPA 101—1976, the Life Safety Code, Paragraph 11-2.3.6) for corridor wall construction proved most satisfactory. The performance of the hotel’s fire brigade demonstrated the need for this type of organization, especially in larger hotels. Orderly evacuation and situation size-up had already begun before the public fire brigade arrived. Coordination and cooperation between the hotel and the public fire brigades prevented further fatalities and led to the control and extinguishment of the fire.

This report is based on an NFPA Fire Investigations Department on-scene investigation conducted by the author. The assistance of Captain Mike Doidge, Acting Chief Fire Officer, Hamilton Fire Brigade; Michael J. Winfield, Emergency Procedures Coordinator, Southampton Princess Hotel; and the Bermuda Police Department is acknowledged and appreciated.

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should be encouraged, on returning to his or her workplace after the orientation the first day, to learn the emergency procedures for that department or area, to look for and read the instructions on the fire alarm station, to look for and read the instructions on the portable fire extinguishers in the work area, to locate and learn how to use any special protection items (masks, safety shower, fire blanket), and to determine an alternate means of egress from the workplace. These should be pointed out by the supervisor, but the new employee should be encouraged to do them on his own if the supervisor cannot show them to him right away.

Students should be instructed in firesafety as necessary by their instructors in laboratories and other academic occupancies, and by residence-hall coordinators or resident assistants in housing units. Faculty members and residence-hall personnel should be informed that they are responsible for this instruction, and that if they fail in this responsibility they not only jeopardize the safety of the student, but also put themselves and the institution in a serious position of liability in case of injury to a student.

What about handicapped people in a building? How will they get out? If use of the elevator is not permitted in fire emergencies, how will a person in a wheelchair be able to get downstairs? If stairways are enclosed and have sizeable landings, he or she can enter a stairway as a place of refuge. Or, if a place of refuge can be reached on the floor where the handicapped person is located, escape may not be too difficult. In some buildings, the sad reality may be that he or she must gamble and use the elevator, or retreat to a room remote from the fire, close the door, and wait for rescuers. If the handicapped person is regularly in the building with other persons, they can be assigned to assist. But if the handicapped person is an occasional visitor, such as to a library, the problem becomes more complicated. Regular occupants of such a building should be assigned in each story or area to look for and assist handicapped persons in emergencies. Unfortunately, it is only in the past few years that colleges and universities have considered designing buildings to accommodate the handicapped. Ordinarily, most colleges and universities seem to cater to the architect’s dream, creating buildings whose interiors sometimes frustrate even the agile and alert!

The local fire department is a very important group that should not be left out of the institution’s firesafety planning and fire drills. It can provide excellent advice and often help with training. Fire department personnel are usually happy to have the opportunity to get inside and learn about the buildings, their layouts, and their contents before a fire occurs. Whenever possible, they should be invited to help plan and participate in fire drills. In this way, the firesafety professional can set up a drill in which a person is randomly selected to initiate action as if a fire had occurred. The alarm and calls can be sent as they should through the various channels (security, fire department, others who respond), and all forces, including the fire department, can respond. Thus, the entire operation can be timed and evaluated. The fire department can give excellent help in evaluating the actions of the employees and students during the drill, and suggest possible changes or improvements.

No matter what the circumstances may be, public opinion, parents, and students hold the college or university administration responsible for the safety of the students. As often as not, this responsibility boils down to protecting the students from themselves. Students entering college are, for the most part, both child and adult, and they vacillate from one state to the other. Few of them have the experience, knowledge, or judgment to realize the speed with which fire, heat, and smoke can travel throughout a building, and it is difficult to convince many of them that they are not immune to the same disasters that befall students in other educational institutions. By the time they are convinced, they are graduating, and a new group is entering to raise the challenge.