

## ***FIRE REPORT: Fourteen die in tower block hotel fire in Kristiansand Norway***

Reference : Fire Prevention n° 198, April 1987

In the early morning of 5 September 1986 a severe fire swept through the Hotel Caledonian in Kristiansand in the south of Norway. The fire resulted in the death of fourteen guests and injury to fifty others. The hotel was thought to be of fire-resisting construction with good fire protection for guests. Staff were reportedly well trained in fire precautions and fire drills were regularly carried out. In the event, the fire protection features of the hotel proved inadequate and staff training not very effective. Estimated damage £3.8 million.

### **The building**

The hotel, constructed in 1968, complied with the building regulations in force at the time. It also complied with the Norwegian *Hotel Fire Precautions Act 1963* which, among other requirements, ordered that the entire premises be protected by an automatic fire alarm system. Unfortunately, the system installed comprised only heat-activated detectors but it did have a direct link to the fire brigade. It was also linked to a tape system which relayed information to guests in case of fire.

The lower three storeys of the building contained the reception area, restaurants, discotheques and conference facilities. The third storey in the tower housed the administration offices and the fourth to twelfth storeys contained two hundred guest rooms. The fire

On the night of the incident, there were 113 guests in the hotel. Two night porters were on duty. At around 0440 hours the porter checking security was alerted by the fire alarm. He immediately took the lift to the first storey reception area where he was greeted by flames and smoke in the vicinity of the stairwell. Together with the other porter, he ran through the restaurant into the street where both men found themselves locked out.

The fire brigade in Kristiansand did receive a telephone call at 0440 hours with the message 'Fire in the reception of Hotel Caledonian' and seconds later the automatic fire message came through. The brigade responded by immediately. On arriving at the hotel three minutes later, the firemen were confronted by a very serious fire.

The emergency staircase led down to the reception area which was aflame. The first firemen to arrive concentrated their initial effort in this area as they believed that the stairway was filled with trapped guests who could not get through the burning reception area. However, the two jets initially available proved no match for the intense heat. It was also established that none of the guests had reached the emergency stairs due to smoke logging of corridors outside the bedrooms.

The fire spread rapidly and soon involved the first four storeys of the hotel. Firemen began rescuing guests with ladders, breathing apparatus teams entered the hotel through broken windows to assist guests onto the ladders. Conditions were extremely difficult with heavy smoke pouring from the building.

### **Survivors' recollections**

Some guests were alerted by the alarm bell in the corridors, others were aroused by the automatic tape message. Those who opened their doors were met by grey smoke apparently coming from the ceiling. Minutes later the smoke was heavy and black and the corridors no longer accessible. Some guests reported that their bathrooms were the first areas to be smoke logged.

The fire was thought to have been caused by an electrical fault in the wiring to a ceiling lamp located in the stairway between the first storey reception and the ground storey restaurant.

The lower storeys were found to have been inadequately compartmented, with gaps between fire resisting walls and floors. The walls and ceilings had combustible linings which assisted fire spread. In the early stages of the fire, smoke spread through ventilation ducts in corridors near the lifts to stream into guest bathrooms.

### ***FRAME calculation***

The report of Fire Prevention n°198 , April 1987, did not give all the features of the building, so a FRAME calculation can only be made with some guesswork for the missing parameters. However, this first rough approach gave as a result  $R=1.00$ ,  $R1=2.54$ ,  $R2=1.65$ . These values are an indication that property damage will be limited, but that it is likely that a serious fire would make victims.