

# Hong Kong Airport Crash Incident 1999



Above : The Hong Kong International Airport

## *Occurrence of the Aircraft Accident*

At around 1845 hours on 22 August 1999, a No. 8 Typhoon Signal was in force. An MD-11 aircraft of China Airlines, flight number CI 642 from Bangkok, with 315 persons on board, approached the South Runway 25L (i.e. heading 250° in a south-westerly direction) of Hong Kong International Airport. The aircraft made a hard landing initially on its right main wheels, its right engine then contacted the runway surface. There was an outbreak of fire and its right wing was detached after the impact. The aircraft then rolled over and ended up in an inverted position on a grass area adjacent to the runway.



**Above : The wreckage of the inverted China Airlines MD-11 aircraft**

### ***Fire Services Response and Time of Arrival***

At the time of accident, i.e. around 1845 hours, both the Air Traffic Control Tower Controller and the staff of the Rescue Control of Airport Fire Contingent (AFC) spotted the crash and the alarm was activated almost simultaneously to summon the AFC. Upon receipt of the alerting alarm, 14 fire appliances and 2 ambulances from the AFC Main and Sub-Fire Stations responded immediately to scene of crash with the first attending appliance arriving less than 1 minute (i.e. 1846 hours).

At the same time, the Air Traffic Control also alerted the Fire Services Communication Centre (FSCC) of Fire Services Department (FSD). In accordance with laid down procedures, the FSCC immediately dispatched reinforcing fire appliances from various units outside the airport. The first reinforcing fire appliance arrived at the airport 6 minutes later (i.e.1852 hours), followed closely by another 13 fire appliances and 55 ambulances.

### ***Fire Fighting Operation***

Within a few seconds upon arrival at the scene of crash, all AFC fire appliances took up strategic positions and the Rescue Leader assumed overall command. As the fire was then spreading to the fuselage and affecting escape, 8

foam monitors on the roof of the AFC appliances were rapidly deployed to suppress the fires that were threatening the mid-ship and tail portions of the fuselage, as well as to tackle the running fires due to the spilt fuel.

The application of foam under high winds and torrential rain presented a problem, as the finished foam could not be accurately applied to blanket the fire. The foam tenders had thus to be positioned very close to the fire and at the best angle of approach. Although this posed the fire-fighters to a high exposure hazard, the tactic proved to be a success; the fuselage fire was brought under control in 2 minutes and suppressed within 5 minutes. The long trail of fire on the runway and around the aircraft was completely extinguished within 15 minutes.

### ***Search and Rescue Operations***

The 14 AFC fire appliances were grouped under four operational units, each with a combination of foam-making, hose laying and rescue capabilities. Fire-fighting and rescue operations were carried out concurrently upon arrival. At about the same time of arrival of fire appliances, some passengers emerged from the aircraft through 3 exits; a large gap in the fuselage at the middle portion near the overwing left door (L2 Exit) which had been torn open by the impact, the overwing left door (L2 Exit) and the forward right door (R1 Exit) openings. Passengers were quickly assisted out of the wreckage by fire-fighters, and many of them needed a lot of reassuring to recompose them. The first fireman who entered the cabin via the forward right door for snatch rescue described that the cabin was filled with smoke, and a permeating smell of jet fuel. Other firemen that followed wore breathing apparatus and entered the cabin to release passengers that were still strapped in their seats in an inverted and overhead position. The search and rescue operation inside the aircraft was constrained by the narrow space, the absence of a gangway and scattered articles blocking the passageway. Very soon, water was accumulated to knee level. Nevertheless, approximately 8 minutes after arrival at the scene, most of the passengers had been rescued and led to place of safety at a casualty clearing station on the runway. With the concerted effort of all fire-fighters, including those from the reinforcing appliances and ambulances, the remaining few passengers were rescued and continued to be conveyed to the casualty clearing stations. All persons on board were rescued and the cabin was literally scoured

for possible victims. After comparing the passenger manifest with information from casualty clearance points and hospitals, the operation was declared complete at 0350 hours on 23 August 1999. Ultimately, the rescue and fire-fighting operation stood down at 0355 hours on 23 August 1999.



### ***Casualty Handling and Triage***

The crews of the 2 AFC ambulances that arrived at scene together with the fire appliances immediately set up a 1st Casualty Clearing Station at taxiway J6 to provide medical treatment to the casualties on the spot. However, in view of the exceptionally adverse weather conditions, the station had to be re-established inside one of the ambulances and later two apron buses for triage. The ambulance crews raced to render treatment to casualties, assisted later by reinforcing teams. At about 1911 hours i.e. 26 minutes after the crash, the first ambulance started to convey 5 seriously injured casualties for Princess Margaret Hospital, about 35 km from the airport, and they arrived at the hospital at about 1953 hours, which is slightly over an hour after the initial call was received.

All emergency personnel exercised utmost patience and professionalism in calming down and reassuring the hysterical casualties while at the same time trying to treat and stabilize their injuries.

A 2<sup>nd</sup> Casualty Clearing Station was established at taxiway J6 at 1945 hours. A temporary mortuary was set up with the use of an ambulance, and a triage point was set up at the Apron Passenger Vehicle Lounge on ground floor of the Passenger Terminal Building near Bay S21 due to inclement weather. More than a hundred passengers were ferried to the triage point by Airport

shuttle buses. The Ambulance Triage Officer sorted out casualties according to their degree of injuries and arranged their priority of conveyance to hospital after primary treatment. Two Medical Teams also attended the scene to render medical treatment. At 2150 hours, all casualties were treated and conveyed to various hospitals for medical attention.

A total of 216 casualties were conveyed to hospitals by ambulances of Hong Kong Fire Services Department, Auxiliary Medical Services and St. John Ambulance Brigade. 99 persons on board who were rescued uninjured were arranged to the airport hotel for rest and accommodation. Unfortunately, 2 passengers rescued from the wreckage were certified dead before arrival at hospital, and 1 passenger died 5 days later in the hospital.

### ***Hardship and Difficulties Encountered***

Around the time of the aircraft accident, the airport was under the influence of severe tropical storm 'Sam' with a No. 8 Typhoon Signal being hoisted by the Hong Kong Observatory.

While speeding to the scene of crash, drivers of AFC fire appliances had to overcome very low visibility in darkness, coupled with torrential rain and erratic surface wind. They had to be extremely cautious on approaching, because of the presence of strewn debris and moving people who at that time were starting to escape from the wrecked aircraft.

Upon arrival at the scene of crash, firemen found the aircraft fully overturned and lying on the grass area between taxiways J6 and J7. Its starboard wing was detached from the fuselage. The fuselage was engulfed in flames particularly in the region of the starboard wing, tail end and port wing. The No. 2 engine (from the tail) was also found detached and burning on the ground to the right of the aircraft's tail. In front of the nose of the aircraft, a long trail of about 100 x 20m of spilt fuel was burning vigorously. Large patches of spilt aviation fuel from the burst aircraft fuel tanks posed an imminent danger of triggering off a major ignition. The possibility of an explosion due to the engine and fuel lines was imminent. The explosive risk was endangering the lives of the 315 persons on board as well as the fire-fighting and rescue crews.

Despite the threat of explosion, the drivers had to position their appliances very close to the fire in order to provide an effective jet against the wind and rain. All fire-fighters had to battle the elements, the difficult terrain and above all, time with the hope of saving as many lives as possible.



**Above : Absence of gangway inside the overturned fuselage**

Search and rescue inside the cabin was extremely onerous due to the narrow space, the large amount of scattered personal belongings, and the knee-deep water. Firemen literally combed under the water for possible casualties who might be submerged.



**Above : Scattered personal belongings and luggage restricted free movement**

## *Experience Gained*

The accident has revealed some areas that can be further improved to enhance overall operational efficiency. These areas include:

- ◆ Road Signage

Due to insufficient signage, some reinforcing emergency services that were not familiar with the topography of the airport platform had experienced difficulties in finding their way to the designated entrance gate. After the accident, signage with adequate lighting and conspicuous colour has been erected on various road junctions leading to the airport to indicate clearly the way to different emergency gates and rendezvous points.

- ◆ Casualty clearing station and triage area

The first attending ambulance crew had experienced difficulties in setting up a triage area under the poor weather conditions. Triage of casualties was conducted first in an ambulance and then in two airport shuttle buses to provide shelter against the wind and rain. Finally, triage had to be conducted inside the passenger terminal building.

The use of airport passenger shuttle buses as triage area and shelter for the casualties was quite practical in this incident. In the light of experience gained, a provision for passenger shuttle buses of sufficient numbers to be dispatched to scene of crash has been included in the Hong Kong International Airport Emergency Procedures Manual.

- ◆ Radio Handset

Some 800MHz radio handsets used by personnel of the AFC were found defective or transmitted intermittently by virtual of water seepage under the heavy rainfall. As a result, the

provision of waterproof cover to radio handsets will be taken into account in the evaluation and procurement of new communication equipment.

### ***Resources from Airport Fire Contingent and Fire Services Department***

In this incident, 28 fire appliances and 57 ambulances with a total of 331 personnel from the AFC and FSD were deployed.

Resources from other agencies included:

Airport Authority Hong Kong  
Auxiliary Medical Services  
Civil Aid Service  
Civil Aviation Department  
Customs and Excise Department  
Department of Health  
Government Flying Service  
Hong Kong Police Force  
Hospital Authority  
Immigration Department  
Information Services Department  
Security Bureau  
Transport Department

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