

Chief Inspector of Accidents
Accident Investigation Division
Civil Aviation Department
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Hong Kong

Accident Bulletin 1/2010

Aircraft type:	Airbus A330-342
Registration:	B-HLL
Year of manufacture:	1998
Number and type of engines:	2 Rolls-Royce Trent 700 turbofans
Date and time of accident:	13 April 2010 at 1343 hours local time (0543 UTC)
Place of accident:	Hong Kong International Airport (VHHH)
Nature of Accident:	CPA 780 declared a Mayday when approaching VHHH with control problem on both engines. The aircraft landed on runway 07L at a groundspeed of 230 knots, with No. 1 engine stuck at about 70 % N1 and No. 2 engine stuck at about 17 % N1. Five main tyres were deflated after the aircraft came to a complete stop on the runway. After confirming from the rescue leader that there was fire and smoke on the wheels, the commander initiated an emergency evacuation of passengers.
Type of flight:	Scheduled Public Transport
Persons on board:	Crew : 13 Passenger : 309
Fatalities:	Nil
Serious Injuries:	Crew : Nil Passenger : One
Commander's licence:	Hong Kong Airline Transport Pilot's Licence (Aeroplanes)
Commander's age:	35
Commander's experience:	7,756 hours (of which 2,601 were on type)
Other crew	Flight Deck : One Co-pilot Cabin : 11 Cabin Crew
Source of information:	Inspector's Investigation

Aircraft Accident on CPA 780 on 13 April 2010
(Airbus A330-342 Registration Mark B-HLL)

(All times are in UTC. Surabaya time is UTC+7 hours and Hong Kong time is UTC+8 hours.)

1. Cathay Pacific Airways (CPA) flight number CPA 780 was scheduled to operate from the Juanda International Airport (WARR), Surabaya, Indonesia to the Hong Kong International Airport (VHHH) on 13 April 2010 with a scheduled time of departure (STD) at 0120 hours (hr) and scheduled time of arrival (STA) at 0600 hr. The actual and forecast weather along the flight plan route, including the departure and arrival airports, were considered acceptable by the flight crew. There was no engine system-related or fuel system-related defect reported in the maintenance log of the aircraft prior to departure. The actual Take Off Weight (TOW) was around 198,700 kilograms (kg), with a total of 33,400 kg of Jet A-1 fuel, including 24,400 kg of fuel uplifted at stand number 8 at WARR where the aircraft was parked before departure.
2. The aircraft took off from runway 28 at 0124 hr. The departure was uneventful and was away from any significant weather. During the climb, the flight crew noticed some minor Engine Pressure Ratio (EPR) fluctuations on No. 2 engine. No. 1 engine also had EPR fluctuations but within a narrower range.
3. At 0158 hr, when the aircraft was leveling off at Flight Level (FL) 390 (i.e. 39,000 feet above mean sea level at standard atmosphere), the Electronic Centralised Aircraft Monitoring (ECAM) message “ENG 2 CTL SYS FAULT” was annunciated. The flight crew followed the ECAM procedures. They also contacted the “Maintenance Control” (MC) of the CPA Engineering Department for technical advice. The company’s Operations Manuals were reviewed. As parameters on both engines were normal except the slight fluctuation of the EPR indications, both the flight crew and the MC were satisfied that it was safe for the flight to continue.
4. At 0316 hr, ECAM message “ENG 2 CTL SYS FAULT” reappeared. CPA 780 contacted MC to discuss and review the issue again. As all engines parameters remained normal except the EPR fluctuations, both the flight crew and the MC were satisfied that it was safe for the flight to continue to VHHH.

5. At around 0455 hr, the flight crew obtained the current weather conditions from the Hong Kong arrival Automatic Terminal Information Service (ATIS) information “Hotel” issued at 0435 hr. The runway in use at VHHH was 07L, with significant windshear forecast for runway 07L and 07R. Wind was from 160 degrees at 9 knots variable between 100 degrees and 230 degrees, visibility was 10 kilometres, few clouds were at 600 feet, scattered clouds were at 1800 feet, temperature was at 29 degrees Celsius, dew point was at 24 degrees Celsius and QNH was 1013. The flight crew completed the preparation for a normal arrival to VHHH.
6. At 0519 hr, during the descent to FL230 at about 110 nautical miles southeast of VHHH, CPA 780 had the ECAM messages “ENG 1 CTL SYS FAULT” and “ENG 2 STALL” annunciated within a short period of time. The flight crew completed the necessary ECAM actions with No. 2 thrust lever at idle position. No. 1 thrust lever was advanced to Maximum Continuous Thrust (MCT) position. At 0521 hr, CPA780 declared a “PAN PAN” (i.e. an urgency signal) with Hong Kong Air Traffic Control (ATC) and advised ATC that it had No. 2 engine at idle thrust. CPA 780 also requested track shortening and priority landing. This was facilitated by ATC, which also alerted the Airport Fire Contingent (AFC) accordingly by declaring a “Local Standby”.
7. The commander informed the Inflight Service Manager (ISM) that there was a problem on No. 2 engine and priority landing would be provided by ATC. The cabin crew were asked to prepare the aircraft for landing.
8. At 0530 hr, when the aircraft was approximately 45 nautical miles southeast from VHHH and was about to level off at 8,000 feet above mean sea level (AMSL), ECAM message “ENG 1 STALL” was annunciated. The flight crew carried out the ECAM actions. At 0532 hr, CPA 780 declared a “MAYDAY” (i.e. a distress signal) with ATC. The commander then tested the engines by moving the thrust levers. During these movements, the No. 1 engine speed increased to about 74 % N1 while the No. 2 engine speed remained at about 17 % N1. [Note : N1 is the rotation speed of the engine low-pressure compressor and turbine rotor expressed as a percentage of its maximum rotation speed.]

9. The commander flew the aircraft manually for a visual approach for runway 07L. At 0541 hr, ATC cleared CPA 780 to land with the reported wind of 150 degrees at 13 knots. During the final approach with both thrust levers at the idle position, No. 1 engine was stuck at about 74 % N1, and decreased to about 70 % N1 during touchdown, and No. 2 engine was stuck at about 17 % N1 throughout the approach and landing.
10. CPA 780 landed on runway 07L at 0543 hr at a ground speed of 230 knots with a landing weight of approximately 173,600 kg. On landing, the lower cowling of No. 1 engine contacted the runway surface briefly. Spoilers were deployed automatically. Only No. 1 engine thrust reverser deployed. The commander applied maximum manual braking and the aircraft came to a complete stop on the runway. The No. 1 engine was still running at 76 – 79 % N1 with the No. 1 thrust lever at idle. The flight crew shut down both engines. The aircraft had five main tyres deflated.
11. The AFC appliances arrived on scene in one minute after the aircraft came to a complete stop. The AFC assessed the situation and noted that there was fire and smoke on the main wheels. They sprayed water to extinguish the fire.
12. After confirming from the AFC rescue leader that there was fire and smoke on the wheels, the commander initiated an emergency evacuation of passengers. The cabin crew then opened all eight emergency exits and the associated slides were deployed automatically. All passengers were able to leave the aircraft in about two minutes. The flight crew carried out a final check of the whole cabin to ensure all the passengers and the cabin crew had evacuated before leaving the aircraft. During the evacuation, 57 passengers were injured. Most of them sustained minor injuries and were given medical treatment immediately at the airport. Ten of them were sent to the hospitals for medical treatment with one passenger suffered from bone fracture and ankle joint dislocation.
13. The Chief Inspector of Accidents has ordered an Inspector's Investigation into the circumstances and the cause of the accident in accordance with the Hong Kong Civil Aviation (Investigation of Accidents) Regulations (Laws of Hong Kong, Chapter 448B). The investigation is being conducted by an investigation team consisting of investigators from the Hong Kong Civil Aviation Department, the Bureau d'Enquêtes et d'Analyses pour la sécurité de l'aviation civile (BEA) of France and the Air Accidents Investigation Branch (AAIB) of the United Kingdom. The National Transportation Safety Committee (NTSC) of Indonesia and the National Transport Safety Board (NTSB) of the United States of America also provide assistance in the investigation. Experts from Airbus, Rolls Royce and CPA also assist in the investigation.

14. The accident investigation team has conducted interviews with the commander, the co-pilot, the cabin crew, and some of the passengers on CPA 780. The information of the Digital Flight Data Recorder (DFDR), Cockpit Voice Recorder (CVR), Quick Access Recorder (QAR) have been successfully downloaded for analysis. The aircraft flight documents, maintenance records, weather information, ATC radio and radar recordings, fuel samples from the subject aircraft and the departure airport have also been collected for investigation purposes. The engines, their control systems and the fuel system are under detailed examinations to determine the possible causes of the abnormal engines behaviours. Engine fuel components and the fuel samples collected have been sent to the United Kingdom and the United States of America for test and analysis.

15. Based on past experience, the investigation is expected to take more than one year to complete. However, during the course of the investigation, should any safety recommendation be necessary, it will be promulgated immediately.

This Bulletin contains facts relating to the accident as determined up the time of issue. The information must be regarded as tentative and subject to alteration or correction if additional evidence becomes available.