

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

Accident Bulletin 3/2010
(An Update Bulletin to 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

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

1. Since the issue of the Hong Kong Civil Aviation Department (CAD) Accident Bulletin 1/2010 on 6 May 2010, investigation work has continued to identify the cause of the loss of thrust control encountered by CPA 780 on 13 April 2010. The CAD issues this Update Bulletin to provide such further information as is now available as the investigation progresses.

2. As reported in the Accident Bulletin 1/2010, the aircraft No.1 engine was stuck at about 70 % N1 and the No. 2 engine at about 17 % N1 on landing. After the accident, the engine fuel components, relevant fuel samples, and the monitor filters in the vessel of the dispenser used for refuelling the subject aircraft at Juanda International Airport (WARR), Surabaya, Indonesia have been collected and sent to the United Kingdom for test and analysis. Information captured by the Flight Data Recorder (FDR) and Quick Access Recorder (QAR) has also been downloaded for analysis.

3. The examination of engine fuel components revealed that the Main Metering Valves (MMV) of the Fuel Metering Units (FMU) of both engines were seized at positions consistent with the corresponding final engine power. The Variable Stator Vane Controller (VSVC) of the No. 2 engine was also found seized. Fine spherical particles (spheres) were present in the FMU, the VSVC and the Variable Stator Vane Actuator (VSVA) of both engines. No faults or failures have so far been observed with any of the removed components, other than those associated with the contamination by the spheres. Examination and analysis indicated that those spheres could not have been generated from within the aircraft airframe or engine systems under normal operating conditions and environment.

4. The examination of fuel samples collected showed that there were also spheres in the fuel samples from the engine fuel system and the aircraft fuel tanks. Traces of such spheres were also present in the monitor filters layers and the fuel samples collected downstream of those monitor filters in the dispenser used to uplift fuel to the aircraft. These spheres appeared to be similar to those found in various aircraft engine fuel components examined.

5. FDR and QAR data, Post Flight Report and Aircraft Condition Monitoring System reports were reviewed and analyzed. There was no evidence of unusual command signal from the Electronic Engine Controls (EEC), the manual thrust and the auto thrust systems. The abnormal engines performance during the flight was believed to have been caused by stiction and eventual seizure of the MMV.

6. The aircraft had uplifted 24,400 kg of fuel at WARR by using hydrant refuelling from Stand No. 8, which was part of the hydrant refuelling circuit serving Stands No. 1 to 10. Prior to the event, there had been extension work performed to the hydrant refuelling circuit as part of the WARR apron extension project for Stands No. 1 to 4. The National Transportation Safety Committee of Indonesia (NTSC) was notified of the CPA 780 accident immediately and the Stands No. 1 to 10 hydrant refuelling circuit was isolated for the investigation accordingly.

7. Subsequent investigation at WARR noted that some of the re-commissioning procedures of that hydrant extension work were not in line with the guidelines and practices commonly used by aviation fuel industry, and that the hydrant refuel system for Stands No. 5 to 10 was used for refuelling, including the subject aircraft, before the completion of the re-commissioning procedures. While the investigation is on-going and without prejudicing its conclusions, the CAD has addressed the following recommendations to the NTSC for the latter's necessary follow-up actions with the relevant parties at WARR regarding the resumption of the hydrant refuelling operation at Stands No. 1 to 10:

7.1 Recommendation 2010-1

Satuan Kerja Pengembangan Bandar Udara Juanda Surabaya (i.e. The Juanda Surabaya Airport Development Taskforce) should, with suitably qualified personnel of aviation fuel hydrant operation and re-commissioning experience, conduct an extensive review of the re-commissioning procedures of hydrant refuel system in accordance with the best practice in aviation fuel industry.*

7.2 Recommendation 2010-2

The Juanda Surabaya Airport Development Taskforce should ensure the re-commissioning procedures are completed before resuming the hydrant refuelling operation for Stands No. 1 to 10 at WARR.*

*(* The Juanda Surabaya Airport Development Taskforce is the project owner for the hydrant refuel system extension work at Stands No. 1 to 4 at WARR.)*

8. The exact source and nature of the spheres are still under investigation. The CAD, in conjunction with the Air Accident Investigation Branch of United Kingdom (AAIB), the Bureau d'Enquêtes et d'Analyses pour la sécurité de l'aviation civile of France (BEA), the NTSC, the National Transportation Safety Board of the United States of America (NTSB), continues to investigate into the circumstances of the accident with the support from Airbus, Rolls-Royce and Cathay Pacific Airways. During the course of the investigation, should safety recommendation be necessary, it will be promulgated immediately.

11 August 2010

This update contains facts and information relating to the investigation up to the time of issue. The information is subject to alternation or correction if additional evidence becomes available.