AIRCRAFT ACCIDENT REPORT No 3/2005

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REPORT ON THE SERIOUS INCIDENT TO BOEING 757-236, G-CPER on 7 SEPTEMBER 2003

Registered Owner and Operator:	British Airways PLC
Aircraft Type and Model:	Boeing 757-236
Registration:	G-CPER
Place of Incident:	During the climb after departure from London Heathrow and on approach to land at London Gatwick
Date and Time:	7 September 2003 at 1805 hrs (All times in this report are UTC, except as stated)

Synopsis

The incident to the Boeing 757 aircraft occurred on the first flight following a 26-day major maintenance check. Shortly after takeoff on a scheduled passenger flight from London Heathrow to Paris, a hot oil smell, that had been present in the cockpit on engine startup, returned. The flight crew donned oxygen masks and immediately diverted to London Gatwick Airport. During the autopilot-coupled ILS approach to Gatwick, the aircraft drifted to the right of the localiser after selection of Flap 30. When the autopilot was disconnected, a large amount of manual left roll control was needed to prevent the aircraft from turning to the right. It was necessary to maintain this control input until touch down. The aircraft landed safely despite these difficulties, with no injuries to any of the passengers or crew.

The investigation determined that the incident had been caused by maintenance errors that had culminated in the failure to reinstall two access panels, 666AR and 666BR, on the right-hand outboard flap and incorrect procedures being used to service the engine oils. The events were the result of a combination of errors on the part of the individuals involved and systemic issues, that had greatly increased the probability of such errors being committed.

The following immediate causal factors were identified:

1 The tasks of refitting the panels to the right wing and correctly certifying for the work carried out were not performed to the required airworthiness standard.

2 Ineffective supervision of maintenance staff had allowed working practices to develop that had compromised the level of airworthiness control and had become accepted as the 'norm'.

3 There was a culture, both on the ramp and in the maintenance hangar, which was not effective in ensuring that maintenance staff operated within the scope of their company authorisation and in accordance with approved instructions.

4 The maintenance planning and task instructions, relating to oil servicing on the Boeing 757 fleet, were inappropriate and did not ensure compliance with the approved instructions.

5 The Airline's Quality Assurance Programme was not effective in highlighting these unsatisfactory maintenance practices.

Eight safety recommendations are made in this report, with the intention of preventing similar incidents in the future.

Findings

1 The roll control problem on the approach to London Gatwick was caused by the asymmetric aerodynamic effects induced by the absence of flap access panels 666AR/666BR on the right wing outboard flap.

2 Access panels 666AR/666BR had not been replaced during recent maintenance.

3 The technician who incorrectly certified for fitting flap panels 666AR and 666BR was appropriately trained and qualified for the level of task being performed.

4 The technician responsible for certifying for the fitting of the flap panels had misinterpreted the panel diagram in the 757 Aircraft Maintenance Manual and did not recognize that the panels 666AR/666BR are hidden by the flap drive fairings when the flaps are retracted.

5 The same technician assumed incorrectly, after inspecting the right wing on a number of occasions and seeing no 'holes' in the wing, that flap panels 666AR/BR had already been fitted and proceeded to certify for their fitment.

6 In certifying for their fitment, the technician exceeded the scope of his certification privileges, as specified in company procedure TP-Q-8.1.1-01, in that he was only permitted to certify for work that he had performed.

7 The missing panels were not identified during an inspection of the hangar racks at the end of the maintenance activity.

8 The missing panels had been placed on the same shelf as panels removed from the leading edge slats that were similar in size and appearance and were not required to be refitted to the aircraft.

9 The missing flap panels, not being clearly visible when the flaps are retracted, were not noticed prior to the aircraft re-entering service, or during the pre-flight inspection prior to the departure from London Heathrow.

10 A non-procedural approach was used to refit the panels on the right wing whereby all of the panels were installed prior to stamping the job cards.

11 The remoteness of the job card racks from the work area encouraged a non-procedural approach to fitting the panels.

12 Maintenance staff frequently did not certify for tasks they had performed prior to going off shift, placing the responsibility on other maintenance staff and thereby encouraging the practice of 'blind stamping'

13 Maintenance staff were often willing to certify for tasks performed by others without verifying that the task had been completed correctly.

14 The culture of 'blind-stamping' was reinforced by the duplication of panel job cards.

15 Some maintenance staff did not fully appreciate the role that certification plays in the chain of airworthiness control.

16 No defects were found that could explain the oil/burning smells in the cockpit/cabin.

17 Incorrect procedures were used to service the engine oils during maintenance.

18 The incorrect servicing of the engine oils possibly caused the oil smells in the cockpit and cabin.

19 The technician who performed the 'Daily Check' engine oil servicing task and the LAE (Licenced Aircraft Engineer) who certified for the task were appropriately trained and qualified.

20 The technician who performed the engine oil servicing task did not comply with the Aircraft Maintenance Manual instructions.

21 The 'Daily Check' oil servicing task instructions were inappropriately engineered for an aircraft docked in a hangar on heavy maintenance and could not be accomplished practically in accordance with the Maintenance Manual instructions.

22 The LAE who certified for the oil servicing task did not have sufficient oversight of the task and certified for it's completion based purely on assumption that the task had been performed correctly.

23 Both the technician and the LAE involved in the engine oil servicing task exceeded the scope of their authorisation by certifying for work that had not been performed in accordance with approved procedures.

24 The 'Daily Check' engine oil servicing task was not being consistently performed on the ramp as a result of inadequate maintenance planning, which failed to ensure that the time limitations for engine oil servicing were complied with.

25 A culture existed within parts of the Airline's Maintenance Organisation in which LAEs and technicians deviated from approved maintenance instructions and company procedures, without being aware of the airworthiness implications and without a perceived need to seek approval from higher authority.

26 Ineffective supervision of maintenance staff had allowed working practices to develop that had compromised airworthiness control.

27 The Quality Assurance Programme was not wholly effective in highlighting unsatisfactory practices on the shop floor.

28 The established number of Quality Engineers and the broad scope of their responsibilities limited the amount of time they were able to spend in the maintenance environment.

29 There was no consistent policy in the Maintenance Organisation's approach to human factor's issues and its conduct of Maintenance Error Investigations (MEI).

30 Maintenance staff did not believe that the MEI process was objective and saw it as being a means only to effect disciplinary action.

31 The Maintenance Organisation took corrective action following the incident, however, this information was not entered on the Airline's

'eBASIS' safety database to enable the safety management loop to be closed.

32 The Maintenance Organisation had not responded in a timely manner to safety recommendations issued by the Safety Services department's 'BASI 4' investigation into this incident.

33 The Safety Services department's method for tracking safety recommendations to ensure the implementation of timely and appropriate safety actions lacked robustness.

34 The Airline's 'BASI 4' procedure lacked clarity in defining that the Safety Services department's investigation took precedence over other company investigations, with the result that two independent, uncoordinated investigations were carried out.

35 The management of quality standards had been heavily devolved to the various sections of the Airline, with a limited degree of central control.

Safety Recommendations

The following safety recommendations are made as a result of this investigation:

Safety Recommendation 2005-116:

British Airways Maintenance Organisation should take suitable action to ensure that maintenance tasks are certified for in a sequential and timely manner. All maintenance staff should also be reminded of their professional responsibilities, the limit of their authorisation, and that approval from the appropriate authority is required when it becomes necessary to deviate from approved instructions and procedures.

Safety Recommendation 2005-117:

British Airways Maintenance Organisation should review job card rack placement ergonomics to ensure that their positioning does not have a detrimental effect on the sequential and timely certification of maintenance tasks.

Safety Recommendation 2005-118:

British Airways Maintenance Organisation should review their 'Maintenance Error Investigation' process, in order to ensure consistency, traceability and accountability in its application, with a view to restoring the confidence of maintenance staff in the process.

Safety Recommendation 2005-119:

British Airways Maintenance Organisation should review the level of supervision on the 'shop floor' to satisfy itself that it is adequate to maintain the required standards of airworthiness.

Safety Recommendation 2005-120:

British Airways should review their structure and procedures for the management of quality, to satisfy themselves that there is sufficient degree of centralised control over the standards of quality within each section of the organisation.

Safety Recommendation 2005-121:

British Airways Maintenance Organisation should review its maintenance planning and production control procedures, for the servicing of B757 engine oils, to ensure compliance with the Aircraft Maintenance Manual at all times, in both operational and heavy maintenance environments.

Safety Recommendation 2005-122:

British Airways Maintenance Organisation should take suitable actions to ensure that the Engineering Quality Services department has a better oversight and understanding of the day to day practices in the areas where maintenance is carried out.

Safety Recommendation 2005-123:

The European Aviation Safety Agency (EASA) should consider introducing a requirement to carry out a duplicate inspection on aircraft access panels, removed and refitted or opened and closed as part of a maintenance procedure, that could significantly affect airworthiness if incorrectly secured and should they detach in flight, endanger either the aircraft, or persons on the ground.

The responses, by British Airways, to the above recommendations are included in the full report.