

**SERIOUS INCIDENT**

<b>Aircraft Type and Registration:</b>	Airbus A340-642, G-VSHY	
<b>No &amp; Type of Engines:</b>	4 Rolls-Royce Trent 556-61 turbofan engines	
<b>Category:</b>	1.1	
<b>Year of Manufacture:</b>	2002	
<b>Date &amp; Time (UTC):</b>	23 April 2005 at 1130 hrs	
<b>Location:</b>	London Heathrow Airport, London	
<b>Type of Flight:</b>	Public Transport (Passenger)	
<b>Persons on Board:</b>	Crew - 19	Passengers - 200
<b>Injuries:</b>	Crew - None	Passengers - None
<b>Nature of Damage:</b>	None	
<b>Commander's Licence:</b>	Airline Transport Pilot's Licence	
<b>Commander's Age:</b>	Not relevant	
<b>Commander's Flying Experience:</b>	Not relevant	
<b>Information Source:</b>	AAIB Field Investigation and operating company report	

**Synopsis**

The aircraft departed with the CG (Centre of Gravity) forward of the operator's allowable limits. The error was detected whilst the aircraft was still airborne. The aircraft crew was contacted and some passengers moved to bring the CG back to within limits. A review of statistics indicated that the operating company had recently experienced an abnormally high frequency of loading errors. The company is reviewing its procedures and its loading operations are being monitored by the CAA.

**History of the event**

The aircraft had arrived on Stand 340 at 1011 hrs and passengers began to disembark at 1025 hrs. In preparation for the subsequent flight, the cleaners arrived at 1045 hrs and the Turnround Coordinator (TCO) left the aircraft

to compile the paperwork for the next flight. This next flight had a departure time of 1200 hrs with a destination of Tokyo Narita Airport. At approximately 1100 hrs, the TCO returned to the aircraft with a copy of the Loading Instruction Report (LIR), amongst other documentation, and discussed the loading of the aircraft with the handling company's 'Loading Team Leader', who also had a copy of the LIR. By 1125 hrs, the final passenger figures had been determined and the resultant loadsheet was sent to the aircraft at 1130 hrs. A minor Last Minute Change (LMC) was annotated on the loadsheet and the TCO took a copy of the signed final loadsheet from the commander and returned to her office. The aircraft left Stand 340 at 1159 hrs and tookoff at 1230 hrs.

Once the TCO had returned to her office, she was handed a copy of the Cargo Weight Statement, which had arrived by fax while she was overseeing the departure. On checking this document against the loadsheet, she noted a discrepancy in the total cargo weight of 1,660 kg. Closer examination of the paperwork revealed that one pallet had a weight of 2,015 kg on the Cargo Weight Statement whereas the LIR indicated a weight of 355 kg for the same pallet. After confirming the accurate weight to be 2,015 kg, the TCO requested the generation of a revised loadsheet. This resulted in an awareness that the aircraft CG was slightly forward of the operator's allowable limits.

A message was passed to the commander of the flight, which was now en-route, and by moving three passengers towards the rear of the aircraft, the aircraft was brought back within the operator's CG limits and a new load sheet was generated to reflect this change. Additionally, the commander confirmed that he had detected no unusual circumstances during takeoff. The aircraft continued on its flight to Tokyo culminating in a normal landing.

The company Safety Services Department were advised of the occurrence whilst the aircraft was still airborne and they arranged for all the cargo to be weighed on arrival at Tokyo. This revealed significant differences in weight compared to the weights annotated on the Cargo Weight Statement. The errors were subsequently traced to inaccuracies generated by the cargo scales at Heathrow; the source of these errors has now been eliminated.

### **Operator's report**

The operator's Safety Services Department cooperated fully with the AAIB and carried out a comprehensive investigation into the incident. The investigation identified the initial error as a mistake made by a member of the Central Load Planning (CLP) facility (run by an

outsourced contractor located overseas) when manually inputting cargo details into a computer planning system, which then generated the loadsheet.

The operator's investigation highlighted three areas for improvement: the electronic interface system between the company and CLP facility; the procedures for data transfer at CLP; and the loadsheet monitoring procedures by the TCO.

The report issued by the company Safety Services Department on 6 June 2005, contained numerous internal safety recommendations covering all aspects of loading procedures. Following the report, the operator is currently undertaking a full review of the loading procedures.

### **Previous incidents**

During the previous year, there had been a number of reported loading related incidents involving the same company. These are summarised below:

**10 July 2004:** Incorrect loadsheet for a Boeing 747 indicating that the weight was 819 kg more than actual. The error was detected after the aircraft had departed but the aircraft remained within weight and CG limits.

**16 August 2004:** Incorrect loadsheet for an Airbus A340 indicating that the weight was 2,163 kg less than actual. The error was detected and rectified prior to the aircraft's departure.

**20 September 2004:** Incorrect loadsheet for an Airbus A340 indicating that the weight was 1,911 kg less than actual. The aircraft remained within weight and CG limits.

**26 November 2004:** Incorrect loadsheet for an Airbus A340 indicating that the weight was 1,665 kg less than actual and two passengers had not been included. The cargo error was detected after aircraft departure and the passenger error was detected at destination.

**16 December 2004:** Incorrect loadsheet for an Airbus A340 indicating that there were two fewer containers than actually loaded. The error was detected after aircraft departure. The aircraft remained within weight and CG limits.

**8 February 2005:** Incorrect loadsheet for a Boeing 747 with two passengers not included. The error was detected after aircraft departure. The aircraft remained within weight and CG limits.

**19 March 2005:** Incorrect loadsheet indicating that the weight was 2,290 kg less than actual. The error occurred when a pallet had not been off-loaded as expected at an intermediate airport. The error was detected at destination but the aircraft remained within weight and CG limits.

**8 April 2005:** Incorrect loadsheet indicating that the weight was 1,330 kg more than actual. The error was detected at destination.

Additionally, an NTSB investigation was initiated into an incident involving an Airbus A340 flight from Washington Dulles Airport to London Heathrow Airport on 7 June 2004. During flight, the crew saw an 'EXCESS AFT CG' warning activate on the flight deck. The warning went out after crew action to transfer fuel. Investigation at destination revealed that incorrect loading had resulted in the CG being 39.4% MAC on takeoff rather than 28.1% as shown on paperwork presented to the commander. This incident resulted in various recommendations made by both the NTSB and the company Safety Services Department.

Research of the CAAMOR database revealed that, during the period covered by the above incidents, the operator had a significantly higher frequency of significant loading errors than other comparable UK operators.

#### **Subsequent actions**

At the time of the incident, the CAA were involved in the annual audit of the operating company and, because of the number of recent loading incidents, the Authority included a specialist Loading Inspector as a member of the team. The audit revealed 'loading' as an area of concern. This has resulted in a programme of continued CAA monitoring of the company loading procedures.

#### **Conclusion**

The incident resulted from incorrect data entry into the computer-based planning system and the mistake was not detected until the aircraft was airborne. The result was that the aircraft was outside the operator's CG limits with the inherent risk of handling problems. While human mistakes will occur, there should be a robust monitoring system for all critical aspects of flight. Incorrect weight and CG can have very serious consequences and should be given a high degree of importance in terms of staffing, training, monitoring and auditing. The incident involving G-VSHY plus the number and regularity of previous loading incidents indicate that the operator had not given the necessary priority to loading issues.

With improvements by the operator and the present CAA involvement in the monitoring of the overall procedures, action is already in hand to improve the situation. In the light of this action, the AAIB has not made any safety recommendations.