

## ACCIDENT

<b>Aircraft Type and Registration:</b>	B Ae 146-200, G-ZAPO
<b>No &amp; Type of Engines:</b>	4 Lycoming ALF502R-5 turbofan engines
<b>Year of Manufacture:</b>	1990
<b>Date &amp; Time (UTC):</b>	25 February 2009 at 2057 hrs
<b>Location:</b>	Stand A1, London Stansted Airport
<b>Type of Flight:</b>	Commercial Air Transport (Cargo)
<b>Persons on Board:</b>	Crew - 2                      Passengers - None
<b>Injuries:</b>	Crew - None                      Passengers - N/A
<b>Nature of Damage:</b>	Dent in aircraft radome, damage to tug windscreen
<b>Commander's Licence:</b>	Airline Transport Pilot's Licence
<b>Commander's Age:</b>	45 years
<b>Commander's Flying Experience:</b>	4,600 hours (of which 1,600 were on type) Last 90 days - 70 hours Last 28 days - 22 hours
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot, CVR recording and company investigation reports

## Synopsis

During pushback from the stand, a loud bang was heard on the flightdeck of the aircraft. The pushback continued, but the towbar became disconnected from the tug due to a failed shear pin. The tug then stopped, but the aircraft could not be halted in time to prevent it colliding with the stationary tug. The nose of the aircraft penetrated the windscreen of the tug, but no injuries occurred.

## History of the flight

The aircraft had been attached to the tug using a conventional towbar arrangement and was ready for pushback from Stand 1L on the Alpha Apron at London Stansted Airport. The aircraft was due to depart on a routine cargo flight, with the aircraft commander as

the handling pilot. The pushback commenced with the intent of following a standard procedure involving the tug pushing the aircraft backwards and to the left, then pulling it forwards and to the right (as viewed by the commander), until the aircraft was lined up on the taxiway centreline. Just after the point where the aircraft had stopped moving backwards and the tug was starting to pull it forwards, a loud bang was heard on the flightdeck. The commander asked the headset operator if he had identified the source of the noise. The headset operator replied that he had not. The commander then requested that the headset operator ask the tug driver what had happened. The headset operator was then seen to converse with the tug driver, but no response was

provided to the commander's request. Meanwhile the tug continued to pull the aircraft forward, and the crew diverted their attention to completing the 'after start' checklist. As the crew focused on this task, they heard an urgent call for "brakes on" by the headset operator. The commander responded by applying the aircraft brakes, but the aircraft could not be stopped in time to prevent a collision with the now stationary tug in front of it, resulting in the nose of the aircraft penetrating the tug's windscreen. No injuries occurred as a result of the collision. The headset operator reported that he had requested brakes be applied by the aircraft crew as soon as he observed the failure of the towbar.

### **Post-accident findings**

The towbar connecting the tug to the aircraft had detached at the tug end. Failure of a shear pin resulted in the main body of the towbar (attached to the aircraft) separating from the 'eye' fitting, which remained attached to the tug. The aircraft commander reported that he inspected the failed shear pin immediately after the accident and that it was heavily corroded and had partially sheared prior to the final failure. However, a subsequent investigation by the ground handling company did not determine the cause of failure of the pin. The aircraft operator reported that the ground handling company could not provide the pin when requested, preventing any further failure analysis taking place. An internal report by the operator also suggested that there was evidence the pushback had been 'erratic' but the ground handling company reported that they considered the pushback was fully compliant with their procedures.

The ground handling company advised that, due to the relative sizes of the aircraft and towbar, there is only a small clearance between the aircraft nose and the tug windscreen during pushback. In the event of a problem, this gives little reaction time before contact occurs. The company also suggested that the limited nature of the damage, to both the aircraft and the tug, indicated a very low speed impact.

### **Conclusion**

Both the aircraft operator and the ground handling company carried out separate internal investigations into the accident. The operator's investigation concluded that the ground handling company's pushback procedures were adequate for the task. It did, however, raise concerns about the condition and standard of maintenance of the ground equipment and recommended an audit be carried out. The ground handling company has confirmed that the equipment is subject to scheduled six-monthly maintenance and routine operational checks. It has also put in place a three-monthly check of the towbar shear pins as a result of the accident. With regard to the operator's own procedures, a change has been made to delay the 'after start' checks until all pushback movements have been completed and ground equipment removed. This change will allow the crew's attention to be focused on the safe completion of the pushback phase of the departure.