

## ACCIDENT

<b>Aircraft Type and Registration:</b>	British Aerospace Jetstream 4102, G-MAJZ
<b>No &amp; Type of Engines:</b>	1 Garrett Airesearch TPE331-14GR-807H 1 Garrett Airesearch TPE331-14HR-807H
<b>Year of Manufacture:</b>	1997
<b>Date &amp; Time (UTC):</b>	26 June 2007 at 1745 hrs
<b>Location:</b>	Birmingham Airport
<b>Type of Flight:</b>	Commercial Air Transport (Passenger)
<b>Persons on Board:</b>	Crew - 3                      Passengers - 9
<b>Injuries:</b>	Crew - None                      Passengers - None
<b>Nature of Damage:</b>	Nose gear collapsed
<b>Commander's Licence:</b>	Airline Transport Pilot's Licence
<b>Commander's Age:</b>	50 years
<b>Commander's Flying Experience:</b>	6,652 hours (of which 434 were on type) Last 90 days - 138 hours Last 28 days - 54 hours
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot and AAIB inquiries

## Synopsis

After a normal pushback the pushback crew were unable to disconnect the towbar. The aircraft commander decided to return the aircraft to the stand. Headsets had not been used during the pushback and communication was via hand signals. The tug attempted to pull the aircraft back onto stand whilst the aircraft parking brake was still applied, and the nose gear collapsed.

### History of the flight

The aircraft was pushed back from Stand 12 at Birmingham Airport onto the centreline of Taxiway W, the parking brake was applied and the nosewheel was chocked. The pushback crew did not wear headsets

during the pushback and communication was via hand signals. When the pushback crew attempted to disconnect the towbar from the tug they were unable to do so, despite several attempts. The aircraft was now blocking the taxiway and obstructing another aircraft that was waiting to taxi. The flight crew obtained ATC permission to return to the stand. The commander used hand signals in an attempt to communicate his intentions to the pushback crew. They attempted to reverse the tug towards the stand whilst the parking brake was still applied, and the nose oleo of the aircraft collapsed forward onto the towbar.

*Report from aircraft commander*

The commander reported “a normal pushback, albeit with hand signals” until the point where the pushback crew attempted to disconnect the towbar from the tug. They were unable to remove the towbar despite several vigorous attempts using a variety of techniques. Meanwhile, another aircraft had pushed back from an adjacent stand and its progress was now obstructed by the Jetstream. The commander was initially reluctant to return to the stand as he was concerned that it would be difficult to communicate that request to the pushback crew without headset communication. Further attempts to remove the towbar were in vain and the commander then made the decision to return to Stand 12. The first officer obtained ATC permission whilst the commander tried to attract the pushback crew’s attention. The first officer flashed the aircraft taxi lights and waved his arms to attract the pushback crew’s attention, but was unable to do so. Eventually, the commander was able to make eye contact, and he pointed first at the aircraft that was waiting to taxi, then at himself and then in the direction of Stand 12. He believed that this instruction was understood, and when the pushback crew pointed at the stand he gave them “a thumbs up” to confirm that this was his intention. Without any further signals the tug commenced reversing and the nose gear collapsed. The commander called for an immediate shutdown and requested the attendance of the emergency services.

*Report from pushback crew*

The pushback driver stated that the crew were not using headsets, as they were unserviceable. He also stated: “with these types of aircraft we do find hand signals safer due to the noise factor”. The pushback was normal up to the point of disconnecting the towbar from the tug, which would not release from the aircraft, despite repeated attempts. The aircraft commander, using hand

signals, gave indications that were understood by the pushback crew to mean the brakes were off and that he wanted to return to Stand 12. The nosewheel chock was removed and the driver reversed the tug. The nose gear of the aircraft then collapsed.

**Pushback procedure**

The airport operational instruction regarding pushback operations stated:

*‘The person in charge of the operation must be connected to the aircraft’s internal communications system, via a headset, to ensure proper communications between the ground crew and the captain of the aircraft.’*

The operator’s Ground Operations Manual procedure for towing aircraft required voice communications between the person operating the aircraft brakes, the person approved for the towing operation and the person who operates the tractor. Whilst it is implied that the towing procedures are applicable for a pushback, the Ground Operation’s Manual has no specific procedure for pushback.

Despite these requirements, it was not unusual for a pushback to be conducted using hand signals only. However, following this accident ground handling staff have been instructed to use a headset at all times.

The tug, a Schopf F110, has a larger securing pin than other tugs used at the airport, and consequently the connection between the tug’s securing pin and towing eye of the Tronair towbar used for the Jetstream was very tight. Both the commander and the pushback crew reported previous incidents where difficulty had been experienced in releasing the towing arm from the Schopf tugs.

The towbar was fitted with a shear pin that was designed to break when excessive turning loads are applied. When an excessive pulling load is applied the shear pin should still break, although it did not do so on this occasion. Had the shear pin broken, its effect would only be to lengthen the towbar marginally and this would not have prevented this accident since no other 'weak link' is in place.

### **Damage to aircraft**

The downlock attachment pin had been pulled from its mounting, with some damage to the surrounding casing. The nose landing gear had collapsed forward onto the towbar. When the aircraft came to rest the rotating propellers were close to striking the ground.

### **Conclusion**

Pushbacks are a routine manoeuvre, normally performed with headset communications between the flight deck

and the pushback crew. The airport instructions and the operator's towing procedures make no allowance for aircraft pushbacks without headsets. Nevertheless, it was not unusual for them to be conducted using hand signals only. Ground handling staff have now been instructed to use a headset at all times.

A routine pushback became unusual when it was necessary to return the aircraft to stand. There is no hand signal for 'I would like to return to stand' and the commander had difficulty in conveying his wishes to the pushback crew. The resulting breakdown in communication led to the aircraft being damaged.