

SERIOUS INCIDENT

Aircraft Type and Registration:	DHC-8-402 Dash 8, G-JECR	
No & Type of Engines:	2 Pratt & Whitney Canada PW150A turboprop engines	
Year of Manufacture:	2006	
Date & Time (UTC):	3 September 2009 at 0544 hrs	
Location:	Isle of Man (Ronaldsway) Airport	
Type of Flight:	Commercial Air Transport (Passenger)	
Persons on Board:	Crew - 4	Passengers - 27
Injuries:	Crew - None	Passengers - None Others - 1 (Minor)
Nature of Damage:	None	
Commander's Licence:	Airline Transport Pilot's Licence	
Commander's Age:	40 years	
Commander's Flying Experience:	6,947 hours (of which 855 were on type) Last 90 days - 116 hours Last 28 days - 45 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

Synopsis

The aircraft had been pushed back off stand and the commander had been cleared by ATC to start the engines. He initially delayed the start, due to an ATC slot delay but, at the same time as he was instructed by the ground crew to set the parking brake, ATC informed him that there would be no delay to his departure. He confirmed that the brakes were set, cleared the ground crew to remove the tow bar and received clearance from the ground crew supervisor to start the right engine. He instructed the co-pilot to start that engine, which caused the forward nosewheel undercarriage (landing gear) doors to close, trapping the ground crewman who was attempting to remove the tow bar.

The aircraft operator and ground handling agent promptly issued instructions to their respective staff to prevent a recurrence of this incident.

History of the flight

The aircraft was on its first flight of the day and was scheduled for a departure to London Gatwick Airport. The flight crew had completed their before-start preparations and had received clearance from ATC to push back off their parking stand and start the aircraft's engines. The ground crew comprised a tug driver who was wearing a cordless headset and was in communication with the aircraft commander, and a ground crewman who was wearing ear defenders and would disconnect the tow

bar, when cleared to do so. The tug driver was the supervisor for the movement of the aircraft, which was coupled to the tug by a tow bar attached to the aircraft's nose landing gear (also referred to in this report as the nosewheel undercarriage).

The commander contacted the tug driver and, in accordance with the aircraft operator's and ground handling agent's standard operating procedures, confirmed that the brakes were released. The tug driver acknowledged that the brakes were released and then commenced the pushback, with the other ground crewman located on the right side of the aircraft. Normally the engines are started as the aircraft commences the pushback. However, because they had pushed back early, the commander planned to park the aircraft in a waiting area, with the APU running, and start the engines nearer the departure time.

As the aircraft approached the end of the pushback, ATC informed the commander that the aircraft would be able to depart without delay. The aircraft came to a stop and the commander was instructed by the tug driver that the pushback was complete and to select the parking brake ON. The commander confirmed that the brakes were set and gave clearance for the tow bar to be disconnected. Having obtained permission from the ground crew supervisor, the commander then instructed the co-pilot to start the right engine. The ground crewman, whose task it was to remove the tow bar, knelt down beneath the nose of the aircraft and, with some difficulty, attempted to remove the tow bar. At this point the right engine was started and pressurised the No 2 hydraulic system. This caused the forward nosewheel undercarriage doors to close and, as they did so, the ground crewman was caught by his right upper arm and chest. He was able to grasp the right door with his left hand and attempted to prevent it from closing.

On seeing his colleague's predicament, the tug driver went to his assistance and instructed the flight crew to stop the right engine. His call was not heard by the crew but the commander noticed that the nose landing gear door amber caption was still illuminated. He asked the tug driver to confirm if the doors were still open but, initially, could not understand his reply. When it became apparent that the other ground crewman had become trapped, the commander immediately shut down the right engine, pulled the landing gear door release handle and exercised the elevator to dissipate the hydraulic pressure.

The ground crewman was able to release himself with the assistance of his colleague and was taken to hospital with minor injuries.

First flight of the day

Before the first flight of the day, the operator's engineering department carries out an inspection on the aircraft, including the nose landing gear bay. In order to perform this inspection, the two forward nosewheel undercarriage doors are opened fully and left in that position until the right engine is started. The landing gear and associated doors are operated using the No 2 hydraulic system, the pump for which is driven by the right engine. When the right engine is started, the hydraulic system pressurises and the forward nosewheel undercarriage doors close. Subsequently, the doors close after the nose landing gear has been raised or lowered and remain closed until the landing gear is next cycled.

Safety action

Following an initial investigation, the ground handling agent issued a Memorandum to its airside staff on 3 September 2009. This stated:

'Before disconnecting the tow bar on any Dash 8 Q400 aircraft you must ensure that the nose wheel undercarriage is in the fully closed position.'

*If the nose wheel undercarriage is not in the fully closed position you must inform the captain and ask them to ensure it is closed **BEFORE** disconnecting the tow bar from the aircraft.'*

The aircraft operator issued a similar Ground Services Bulletin (GSB) No33 on 7 September 2009 which stated:

'Before disconnecting the tow bar on any Dash 8 Q400 aircraft, ground operators must ensure that the 'forward' nose wheel undercarriage doors are in the fully closed position.'

If the forward nose wheel undercarriage doors are not in the fully closed position, the Captain must be informed and the tow bar must not be disconnected from the aircraft.

*When engine start clearance is given the nose wheel bay area must be clear. **DO NOT ALLOW ANYONE TO APPROACH THE WHEEL BAY DURING ENGINE START.***

During the engine start, hydraulic pressure will close the doors automatically. If the doors still do not close, inform the Captain again. Only once the doors have fully closed may the tow bar be disconnected.'

The operator included two photographs in the GSB illustrating the forward doors closed and open, Figures 1 and 2.



Figure 1
Doors closed



Figure 2
Doors open