SERIOUS INCIDENT

Aircraft Type and Registration:	Boeing 737-4Y0F, EC-MIE
No & Type of Engines:	2 CFM CFM-56-2CI turbofan engines
Year of Manufacture:	1992 (Serial no: 26069)
Date & Time (UTC):	16 June 2021 at 0104 hrs
Location:	East Midlands Airport
Type of Flight:	Commercial Air Transport (Cargo)
Persons on Board:	Crew - 2 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Damage to towbar and two landing gear tyres
Commander's Licence:	Airline Transport Pilot's Licence
Commander's Age:	54 years
Commander's Flying Experience:	11,750 hours (of which 9,570 were on type) Last 90 days - 120 hours Last 28 days - 11 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot and further enquiries by the AAIB

Synopsis

After an uneventful pushback, the towbar was left on the taxiway in front of the aircraft. Soon after the aircraft commenced taxiing, its left landing gear went over the towbar. The missing towbar was noticed when the ground crew returned the tug to the towbar parking area. The aircraft was subsequently stopped from taking off to allow an inspection to take place. Damage was found to two landing gear tyres, which were replaced before the aircraft departed.

The investigation found that the ground crew did not complete some of their tasks or check the taxiway was clear before they left the area.

As a result of this incident the handing agent implemented several safety actions to make the ground crew's procedures more robust.

History of the flight

The aircraft was on a cargo flight from East Midlands Airport, Leicestershire, to Vitoria Airport, Spain. It was parked on Stand 99, on the West Apron. This is a 'nose-in' stand which requires a pushback prior to taxi. The ground crew in attendance for the pushback were a headset operative (HO) and a tug driver (TD). At the time, it was night.

The pushback and start up were uneventful. Once the pushback was completed the HO placed a chock in front of the nosewheel, to prevent the aircraft from moving, while the towbar and the HO's headset were disconnected. It is the HO's last task and responsibility to remove the chock and hand it to the TD, who places it in a basket on the tug, before walking off the taxiway. At this time the commander informed the HO that he was cleared to disconnect, and he would await the 'visual clearance', with the nosewheel steering bypass pin, on the right side of the aircraft.

Upon clearance from the HO, the TD reversed the tug slightly to allow the HO to disconnect the towbar from the tug. The HO then disconnected the towbar from the aircraft, removed the bypass pin and disconnected his headset. The TD turned the tug around and exited to re-connect the towbar to the rear of the tug, positioning the towbar on top of the rear attachment on the tug. However, before he secured it to the tug with a drop-in pin, he noticed that the HO was walking away from the aircraft with the chock still in front of the nosewheel. This was recorded on CCTV. The TD left the towbar on top of the attachment, went to the nosewheel, removed the chock and placed it in the basket on the tug. He then re-entered the tug and drove off the taxiway to collect the HO, without connecting the towbar to the tug. The towbar remained on the taxiway in front of the aircraft. Once the HO had given the crew the visual clearance, he entered the tug and the TD drove them to the towbar parking area, before the aircraft started to taxi, but without checking the taxiway was clear.

The crew received clearance from ATC to taxi towards Runway 27. Soon after the aircraft started to move, the co-pilot felt something similar to the toe brakes being applied momentarily. Upon asking the commander if he had checked the brakes, the commander said he had not. They did not see the towbar under the aircraft's nose prior to commencing the taxi, Figure 1.

Figure 1

EC-MIE and towbar just prior to taxiing

After the tug arrived at the towbar parking area, the HO got out to disconnect the towbar to discover it was not attached. Upon informing the TD he immediately drove back to Stand 99, without the HO, entering the taxiway without permission, and found the towbar

in the taxiway with damage indicating that the aircraft had taxied over it, Figure 2. The TD immediately informed ATC and his supervisor, who informed airfield operations.

Figure 2
Towbar showing damage

Whilst the aircraft was waiting to depart at the holding point for Runway 27, ATC informed the crew that there had been an incident during the pushback and an inspection of the aircraft was required. Subsequently, they were informed by the handling agent that the aircraft had struck something and they should return to a stand for an inspection. The aircraft was subsequently taxied back towards the East Apron, stopped, shutdown and towed onto a stand, where it was inspected. Upon inspection, damage was discovered to the two tyres on the left landing gear, Figure 3. The damaged tyres were replaced before the aircraft departed after a delay of nearly four hours.

Figure 3
Damage to one of the landing gear tyres

TD comments

The TD, who was also a qualifed HO, stated that he did not connect the towbar when he was at the rear of the tug, before he retrieved the chock, as he was distracted by the HO walking away from the aircraft. While he knew it was not his resposnsibility to remove the chock, he felt he should do it as he had previously witnessed another incident where a HO had left the chock behind and the aircraft taxied over it.

He added that, as an HO, he had witnessed a TD remove the chock on the odd, very rare occasion.

Addtionally, he realised he had entered the manoeuving area without permission but he was in a state of panic at the time.

HO comments

The HO, who was also a qualified TD, stated that he did not know why he did not remove the chock because he normally does it. He commented that sometimes the TDs place the chock on the towbar, despite it not being their responsibility. He has also "occasionally" removed the chock when he has been a TD.

He added that he did not know why he gave the 'all clear' signal to the crew when the towbar was still there, but he felt that the signal was primarily to show the steering bypass pin had been removed rather than check the taxiway was clear. Also, there was no procedure in place to wait until an aircraft had commenced taxiing.

Analysis

The HO and TD have defined tasks and responsibilities during a pushback, with the HO being responsible for removing the chock from the nose wheel and passing it to the TD.

On this occasion it appears that the HO forgot to remove the chock, as he was seen on CCTV walking towards the edge of the taxiway before the TD went to remove it. This omission seems to have distracted the TD at a key point when he was in the process of connecting the towbar to the tug, and he seems to have prioritised the removal of the chock over ensuring the towbar was connected to the tug. This was likely a result of him previously witnessing an aircraft taxi over a chock.

While it is the HO's responsibility to remove the chock, it appears that, while it was not a regular occurrence, it was not unknown for a TD to remove it.

Had they positively checked the taxiway in front of the aircraft and waited at the edge of the taxiway until the aircraft had taxied away, they may have noticed the towbar and stopped the aircraft before it taxied over it.

Fortunately, the damaged towbar was found before the aircraft took off, thus avoiding the aircraft taking off or landing on damaged tyres, the result of which may have been more serious.

Conclusion

The aircraft taxied over a towbar soon after it had been pushed back. The towbar had been left in front of the aircraft through a combination of one member of the ground crew forgetting to remove a chock and another being distracted by this as he was in the process of connecting the towbar to the tug. Both members of the ground crew also seem to have not checked the area in front of the aircraft as they cleared the taxiway.

Safety actions

As a result of this incident, the following safety actions were taken:

The handling agent reviewed the headset operatives' and tug drivers' roles and responsibilities and added the following procedures:

- The chock is removed from the nosewheel by the headset operative.
- The chock is handed to the tug driver who stows it in a basket on the tug.
- The tug driver immediately vacates the taxiway with the tug and towbar.
- The tug driver parks in view of the aircraft and checks the area is clear in front of it.
- After the tug has departed, the headset operative checks that the area in front of the aircraft is clear of equipment and FOD [foreign object damage/debris], and that the pathway is clear.
- The tug driver waits for the aircraft to taxi to ensure they are no longer required.

The handling agent also reviewed and amended its training material, '*safe systems of work',* and auditing processes to reflect these changes and to try to prevent recurrence. It also publicised the event and these changes to its staff in its '*Internal Operations Briefing'*.