

AAIB Bulletin No: 5/93

Ref: EW/G93/01/07

Category: 1a

Aircraft Type and Registration: BAe ATP, G-BMYK

No & Type of Engines: 2 Pratt & Whitney 126 turboprop engines

Year of Manufacture: 1987

Date & Time (UTC): 15 January 1993 at 0716 hrs

Location: East Midlands International Airport

Type of Flight: Public Transport

Persons on Board: Crew - 4 Passengers - 10

Injuries: Crew - None Passengers - None

Nature of Damage: Right side propeller destroyed and severe engine damage. Right side outer panels of fuselage punctured by fragments of propeller blades. Significant damage to right side horizontal webb between fuselage and engine. Push-back tractor severely damaged.

Commander's Licence: Airline Transport Pilot's Licence

Commander's Age: 27 years

Commander's Flying Experience: 5,005 hours (of which 2,005 were on type)
Last 90 days - 86 hours
Last 28 days - 24 hours

Information Source: Aircraft Accident Report Form submitted by the pilot, operating company and AAIB on site investigation

The aircraft was parked on Stand B30 at East Midlands International Airport in preparation for a scheduled public transport flight to Belfast/Aldergrove Airport. This stand requires that aircraft are parked on a southerly heading with the nose facing towards the terminal buildings. They are then pushed back and turned onto an easterly heading before commencing taxiing (see diagram). The tow bar and a 'small' open top Massey Ferguson Type 50 tractor were connected to the aircraft. Two way communication was established between the flight deck and Line Engineer on headset. Push back clearance was obtained from Air Traffic Control at 0715 hrs. At this time the surface wind was reported to be 200°/30-45 kt and the terminal area tarmac surface was wet.

The commander reports that two way communication was established between the flight deck and Line Engineer on headset and, after a normal engine start sequence, he released the brakes and the push back commenced. Initially, in accordance with normal procedures, the aircraft was pushed back in a

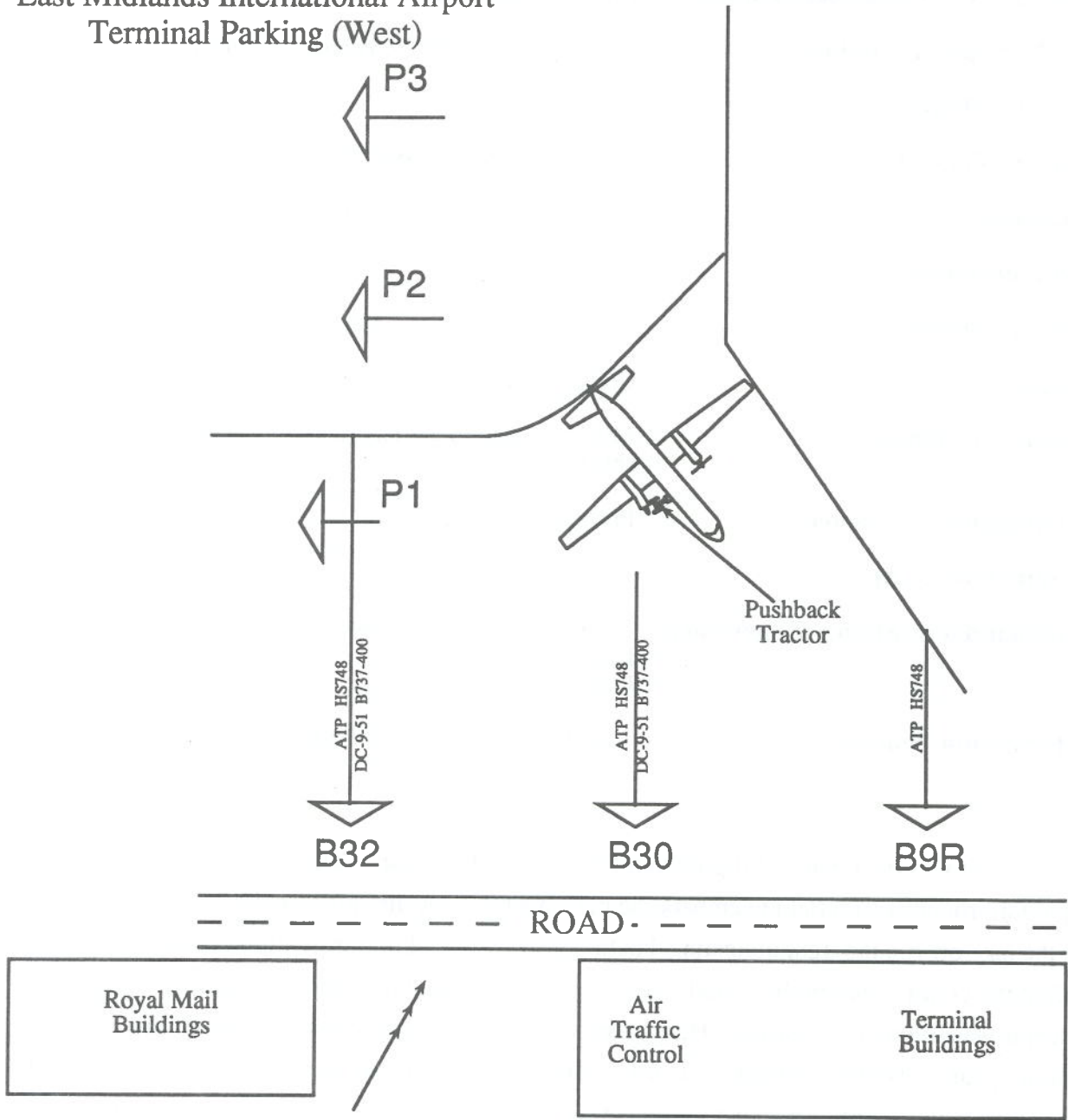
straight line before a gentle turn was started to face the tail towards the west. During this turn the flight crew became aware that the aircraft had slowed down before it suddenly moved forward as if to be re-positioned onto the stand. At this moment the commander was concerned to see the Line Engineer making agitated hand signals and he immediately applied full braking but this had little immediate effect. A very short time later the tractor collided with the aircraft's right hand propeller. As the aircraft made contact with the tractor it moved violently up and down as the propeller blades disintegrated and spread debris over a wide area. The commander promptly shut down both engines and ordered an emergency evacuation through the left side doors. The violent movements of the aircraft as the propeller disintegrated were such that the first officer's head set flew off and fell to the flight deck floor, and he was thus unable to advise ATC of the emergency. However, the ATC aerodrome controller had observed the accident and promptly initiated emergency action which produced the emergency services quickly at the scene. The emergency evacuation was completed in about 40 seconds and there were no injuries to persons.

The tractor driver reports that, after the aircraft's brakes were released, there were initially no problems in pushing the aircraft straight back. However, shortly after he commenced a shallow turn to position the tail to the left, the tractor slowed and he was unable to maintain momentum as its front wheels started to slide. Application of the brakes appeared to have little effect when suddenly the towing arm sheared as the aircraft and tractor 'jack-knifed' towards each other. Realising that the right engine was moving directly towards the tractor, the driver jumped clear shortly before the collision and ran towards the nose of the aircraft to where the Line Engineer was standing. They then both assisted in the emergency evacuation by holding the escape slides which were being blown off the ground by the strong wind.

Examination of the towing arm showed that it had fractured at a position that was between the tractor end attachment and the shear pin, which was still intact. There was also some evidence of corrosion at this point. The break ends showed evidence of significant downward bending, which indicated that at the moment of fracture either the tractor's front wheels or the aircraft's nose landing gear (or both) were not in contact with the ground.

A meteorological observation recorded shortly after the accident recorded a surface wind of 200°/30 kt, gusting to 44 kt. However witnesses who were retrieving debris from the parking area reported that the wind appeared to be much higher than that recorded due to the 'funnelling' effect between the terminal buildings. The operating company has reviewed their procedures for the ground handling of aircraft when high surface winds are forecast. They have also drawn attention to the serious health risk associated with the retrieval of Carbon Fibre Compound fragments of the composite propeller blades.

East Midlands International Airport
Terminal Parking (West)



Reported Surface Wind 200°/30-45 knots