

## FINAL REPORT

**AAIU Synoptic Report No:2004-012**  
**AAIU File No: 2003/0018**  
**Published: 16/08/04**

**In accordance with the provisions of SI 205 of 1997, the Chief Inspector of Accidents, on 17 April 2003 appointed John Hughes as the Investigator-in-Charge to carry out a Field Investigation into this occurrence and prepare a Synoptic Report.**

<b>Aircraft Type and Registration:</b>	BAe ATP,	G-MANE
<b>No. and Type of Engines:</b>	2 x PW126	
<b>Aircraft Serial Number:</b>	2045	
<b>Year of Manufacture:</b>	1991	
<b>Date and Time (UTC):</b>	16 April 2003	@ 15.25hrs
<b>Location:</b>	Stand 10, Dublin Airport	
<b>Type of Flight:</b>	Scheduled Transport	
<b>Persons on Board:</b>	Crew - 4	Passengers - 28
<b>Injuries:</b>	Crew - Nil	Passengers - Nil
<b>Nature of Damage:</b>	Damage to Radome	
<b>Commander's Licence:</b>	UK ATPL	
<b>Commander's Details:</b>	Male aged 58 years	
<b>Commander's Flying Experience:</b>	14,900 hours of which 3,200 were on type	
<b>Information Source:</b>	Aircraft Operator and Operations Manager, ATS Dublin Airport	

### **SYNOPSIS**

This incident occurred when the aircraft was being pulled forward after the completion of the pushback from Stand 10. The Captain requested the aircraft to be pulled forward in order to allow clearance for another operators aircraft. As the aircraft was being pulled forward, the roof of the tug cab damaged the aircraft radome. There were no reported injuries as a result of this incident.

This Report makes two Safety Recommendations.

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## 1. FACTUAL INFORMATION

### 1.1 History

The Captain asked for a “push and start” which was approved. Another aircraft on neighbouring Stand 8 also made a similar request. The Captain of the ATP aircraft then made a request to ATC that when finished pushing he wished to pull forward to allow the other aircraft to push from its stand. Shortly afterwards the Captain reported that he could not pull forward as his aircraft had appeared to have collided with its tug. The Captain then requested a return to Stand 10 which was granted. The aircraft then taxied back to that Stand.

### 1.2 Aircraft Damage

There was damage to the aircraft radome.

### 1.3 Witness Comments

#### 1.3.1 **Tug driver**

The tug driver stated that he pushed the aircraft towards the end of Stand 10 with the tug facing the aircraft. As he approached the end of the stand he steered the aircraft gently to the right and stopped at an angle to the yellow line as he had been trained to do. He stated that the ground crew mechanic spoke to the flight crew and as he was about to disconnect the pin he was requested by the flight crew to be pulled forward. He pulled the aircraft forward as requested and it was during this operation that the forward right hand side of the radome contacted the light at the left-hand upper corner of the tug.

#### 1.3.2 **Ramp Equipment Manager**

The Ramp Equipment Manager stated that he trained the tug driver and that he was confident that he is a responsible and diligent employee.

#### 1.3.3 **Ground Mechanic**

The mechanic stated that the push back was normal. On completion of the pushback the Captain requested that the aircraft be towed forward to clear another operators aircraft which was departing from Stand 8. When he received the request to be pulled forward he asked the Captain if he required the relevant pins to be fitted. The Captain informed him that there was no requirement for any pins to be fitted and that he should proceed with the movement of the aircraft. As the aircraft was being towed forward it contacted the top of the tug cab and damaged the radome.

The personnel involved made the point that they were apprehensive about towing the aircraft forward with the propellers rotating because of Health and Safety reasons. They acceded to the request of the Captain in order to expedite the departure.

#### 1.3.4 **The Captain**

Captain stated that he requested the tow forward on the taxiline prior to the commencement of the pushback, but that there was a slight problem with the cockpit to ground communications at that point.

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## 1.4 Equipment and Training

The towbar was manufactured by TRONAIR and was supplied by the aircraft Operator. The Part Number was partially obliterated but the last four digits were “0000”. The tug was a Douglas DC8 (Fleet No. LTU No.4). The aircraft Operator accepted that it was a suitable tug for this type of aircraft and was used on ATP aircraft in the UK. The TRONAIR custom built towbar recommended for the ATP aircraft is 01-1193-0010 and is 137.4 inches long.

The tug driver had a current Contractors driver’s permit and had recently completed training. It was noted that the mechanic had not received the most recent aircraft Operator handling course. However, he was an experienced man who had received previous one to one training on handling regional type aircraft.

## 1.5 Additional Information

This incident was reviewed at a meeting between the handling Contractor and the aircraft Operator on 24 April 2003. During the meeting the Contractor indicated that the ground mechanic did not report any difficulty with communication to the flight deck. The aircraft Operator requested the Contractor to implement a “read and sign” policy to ensure effective communication and clarity of Operator Ground Handling Alert Notices and Contractor Line Maintenance Notices. The Operator emphasised the need for much clearer hand signal communication between the tug driver and the mechanic and the need for the mechanic to visually display the removed towbar pin to the tug driver prior to the tug being driven from the aircraft.

The Operator requested that the current pushback procedure should be continued. A Contractor Line Maintenance Notice was issued (**Appendix A**) following this incident and it states that the only way the aircraft is to be towed forward is to request that the engines be shut down (Health and Safety reasons), pins installed and tug reversed to the tow position.

During discussions the Operator indicated that they would measure the length of the towbar in use at other locations and advise the Contractor.

## 1.6 Tests

The Operator confirmed to the Investigation that the TRONAIR part number for the multi-head attachment bar is 01-1201-0000 and that for the ATP the head is 010-0565-000. These were used right across their network. The Contractor measured the towbar and found that the distance from the centre of the eyebolt (tug end) to the aircraft interface was 133.5 inches. The aircraft manufacturer measured the distance between the rear face of the nose wheel lug and the front of the radome and found this to be 118 inches. This would leave a clearance of 15.5 inches between tug and radome.

The aircraft manufacturer indicated that they did not approve the TRONAIR towbars. The approved custom built towbar had part number JD091J0001 and this was 140 inches in length.

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## 2. ANALYSIS

With the tug and towbar in use it was possible for the tug to strike the radome when the front of the tug in use was at an angle of about 60° to the centreline of the aircraft. This angle was probably never envisaged in operation as it would have been considered excessive.

The towbar in use was recommended and supplied by the aircraft Operator. However the towbar and head have different part numbers to those recommended for use with the ATP aircraft by the towbar manufacturer, TRONAIR.

The aircraft manufacturer, in turn, have their own towbar as detailed in the aircraft ground equipment list. This is the longest towbar and therefore the likelihood of striking the radome is less. Under the circumstances, the Investigation is of the opinion that a “read and sign” policy in this case, would have had little influence on the outcome of the event. The height of the tug cabin is in the order of 6 ft. A smaller, more manouverable tug would have been more suitable. However the tug in use was the one recommended by the aircraft Operator.

Incidents and accidents involving towing equipment can be serious and even fatal. The Investigation wishes to make reference to an article in the ICAO Journal No.3, 2004, entitled “Ramp Safety-Focus on Training and Procedures”.

## 3. CONCLUSIONS

### 3.1 **Findings**

There was insufficient distance between the tug and the aircraft to cover all possible relative positions of both during pushback.

## 4. SAFETY RECOMMENDATIONS

- 4.1 It is recommended that the Operator review with the Aircraft Manufacturer the required towbar for this ATP aircraft. [\(SR 31 of 2004\)](#)
- 4.2 It is recommended that the Maintenance Contractor review with the Aircraft Operator and Aircraft Manufacturer the type of tug to be used with this aircraft/towbar combination. [\(SR 32 of 2004\)](#)

**APPENDIX A**

# **Towing Procedures**

**Background.**

Propeller driven aircraft by their nature are dangerous machines. The smaller regional types are more dangerous by the fact that the aircraft are short in length. When the propellers are operating they are in very close proximity to the headset operator. All pushbacks should be pushed straight back to the taxi line, the pilot can then steer on to the taxi line under aircraft power.

**Action:**

All staff involved in the handling of these types of aircraft are advised to exercise extreme care at all times. With immediate effect these regional type propeller driven aircraft are not to be towed forward unless the following is carried out:

1. Shut down the engines.
2. Install safety pins in the nose gear.
3. Change around the tug to the tow position.