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Aircraft Type and Registration:	Airbus 321-200 G-MIDH
No. and Type of Engines:	Two V2527-A5 Turbofans
Aircraft Serial Number:	968
Year of Manufacture:	1999
Date and Time (UTC):	15 January 2000, 07.55
Location:	Stand 40 Dublin Airport
Type of Flight:	Scheduled Public Transport
Persons on Board:	36
Injuries:	Nil
Nature of Damage:	Damage to Aircraft Radome
Commanders Licence:	ATPL
Commanders Age:	33 yrs
Commanders Flying Experience:	4300 hours total 400 hours on type
Information Source	Aer Rianta Duty Officer, Dublin Airport, AAIU Field Investigation

SYNOPSIS

At approximately 07.55 hours G-MIDH commenced push-back from Stand 40 at Dublin Airport. The push-back crew consisted of the tug driver, a wingman and an engineer. The push-back proceeded normally until just before turning on to the taxiway when the cab of the tug came in contact with the aircraft's radome. The airport's duty officer, on listening to the RT between the aircraft's crew and ATC, informed the Air Accident Investigation Unit.

1. FACTUAL INFORMATION

1.1 History of the Incident

At approximately 07.55 hours G-MIDH commenced push-back from Stand 40. The push-back crew consisted of the tug driver, a wingman and an engineer. The driver and wingman were employees of the aircraft Operator. The engineer was on contract from a local aircraft maintenance organisation. Having observed the starting of No. 2 engine the engineer went to the port side of the aircraft to observe the No. 1 engine start-up. He was wearing a headset and was in voice contact with the aircraft crew during the engine start up and push-back. He received instructions from the aircraft crew and relayed these by hand signal to the tug driver. The aircraft commenced push-back along the centre yellow taxiline until it approached the red taxiway boundary line when the tug and towbar started to position so as to turn the aircraft on to the taxiway. At this point the top LH corner of the cab made contact with the aircraft's radome which was badly scraped and punctured. The aircraft was towed back to the stand and the passengers exited the aircraft in the normal way.

1.1.1 Witness Recollections

The Captain of the aircraft said that during the 90 degree turn onto the taxiway, a loud scraping noise was heard in the cockpit. The aircraft stopped and the pushback engineer requested that the parking brake should not be set as the aircraft would need to be towed back to the stand. This was due to the damage caused by the tug striking the aircraft during the turn. The aircraft was towed back to the stand and shut down. The Captain said that as far as he was aware the tug and towbar were of a type similar to what the Operator utilised at other airports.

The Engineer stated during push-back that the tug went to an acute angle in relation to the aircraft to such an extent that the left side top corner of the cab contacted and subsequently punctured the radome,which is effectively the nose of the aircraft.

The wingman said that he was on the starboard side and walking with the aircraft. As the aircraft was about to turn on to the taxiway he turned to go to the towbar. He noted that the corner of the cab had made contact with the nose cone of the aircraft. He said the engineer examined the damage to the radome and after consultation with the crew the aircraft was pulled back to the stand. The tug driver said that at the start of the pushback he was given the hand signal "brakes off" by the engineer. He proceeded with the pushback. While turning the aircraft onto the taxiway he heard a grinding noise. He than stopped on the engineer's instructions and put "brakes on". He said that he had over eight years experience of aircraft push-back and did not think it was possible for the tug to come in contact with the aircraft.

1.2 Damage to the Aircraft

The radome was scratched on the underneath starboard side approximately 30 cm from the base of the radome. The LH corner at the top of the cab penetrated the radome leaving an indent of approximately 6 cm to expose the honeycomb interior.(Fig.1)

1.2.1 Additional Information

The investigator inspected the tug-towbar-aircraft combination on Stand 40. The lateral distance between the nose of the aircraft and the front of the cab where the towbar is located was of the order of 30cm.

2. ANALYSIS

The tug driver had over eight years experience in aircraft marshalling and push-back. Most of this was as an employee of a handling contractor at the same airport. He was unaware that the geometric configuration of the aircraft towbar-tug combination was such that, under certain circumstances, the tug could impinge on the aircraft resulting in considerable damage.

The physical considerations are such that if a longer towbar were used or the height of the cab reduced, it would prohibit the likelihood of a repetition of this incident.

3. CONCLUSIONS

An incorrect towbar, of insufficient length, was used for the pushback. This was the cause of the incident.

4. Safety Recommendations

The towbar authorised for use with this aircraft type should have a longitudinal separation of at least 1 metre between the nose of the aircraft and the front face of the cab. **(SR 6 of 2000)**

Fig. 1 Damage to Radome of G-MIDH 6cm I----I