

INCIDENT

Aircraft Type and Registration:	Airbus A319-131, G-EUOF	
No & Type of Engines:	2 IAE V2522-A5 turbofan engines	
Year of Manufacture:	2001	
Date & Time (UTC):	12 February 2007 at 0750 hrs	
Location:	Stand 415, Terminal Four, London (Heathrow) Airport	
Type of Flight:	Commercial Air Transport (Passenger)	
Persons on Board:	Crew - 7	Passengers - 57
Injuries:	Crew - None	Passengers - None
Nature of Damage:	Damage to cushion on airbridge shroud. (No damage to aircraft)	
Commander's Licence:	Airline Transport Pilot's Licence	
Commander's Age:	36 years	
Commander's Flying Experience:	6,550 hours (of which 6,350 were on type) Last 90 days - 150 hours Last 28 days - 48 hours	
Information Source:	AAIB Field Investigation	

Synopsis

The aircraft was taxiing on to Stand 415 following the guidance provided by the Stand Entry Guidance (SEG) system. The stand's airbridge had previously been repositioned in order for its floor to be replaced, in accordance with an Airside Works Instruction (AWI) drawn up by the airport operator. The AWI specified that a marshaller was required for all 'live' arrivals on the stand. The airline operator's Turn Round Manager (TRM) had not been made aware of this requirement and had earlier switched on the SEG system. No marshaller attended the aircraft's arrival and the commander considered that the airbridge was sufficiently clear. On seeing that the aircraft's left wing tip was about to strike the airbridge the TRM, and a colleague, gave

the 'stop' sign and activated the stop button on the SEG system. The aircraft stopped 4 metres short of its designated stop line, during which the left wing tip made contact with the curtain on the airbridge. There were no injuries and the aircraft was undamaged. One recommendation is made to the airport operator.

History of the flight

The aircraft was taxiing on to Stand 415 at Terminal Four following its arrival at the airport. Earlier the operator's TRM had switched on the stand's Stand Entry Guidance system (SEG).

Before taxiing on to the stand, the flight crew confirmed

that the SEG was switched on and that it indicated their aircraft type. Also, the commander, who was the handling pilot, and co-pilot each checked that their respective sides of the stand were clear of obstacles. While doing so, the commander noticed that red and white barrier markers had been placed around the base of the airbridge on the left of the stand. Unaware of any work in progress, and with the SEG selected on, he did not consider that the airbridge represented an obstacle and, consequently, he taxied the aircraft forward following the indications on the SEG system. When the system indicated that G-EUOF had 5 metres to run to the Airbus A319 stop position, the commander noticed the TRM, on the stand ahead of the aircraft, giving the stop sign with her arms crossed and he saw the guidance system change to a 'STOP STOP' message. The commander applied the brakes and the aircraft came to a halt 4 metres short of its normal stop position.

The crew of another aircraft, which had just pushed back off Stand 415 and was stationary on the taxiway, had observed G-EUOF taxiing on to the stand and informed ATC, by radio, that the aircraft's left wing tip had struck the jetty. This was the first that the flight crew in G-EUOF were aware that their aircraft had made contact with an obstacle. ATC initiated a Ground Incident and the Aerodrome Fire and Rescue Service (AFRS) and the police attended. It was established that the aircraft's left wing tip was in contact with the flexible curtain at the end of the airbridge. However, there was no sign of any fluid leakage or fire hazard. After assessment, a tug vehicle was summoned and the aircraft was pushed back "2 to 3 feet", which was sufficient to provide a gap between the aircraft's left wing tip and the jetty, enabling the passengers to be disembarked using airstairs. Whilst the wing tip fairing ahead of the tip fence had some marks on the surface, from light contact with the airbridge, there was no damage to the aircraft.

Recorded information

Both the Flight Data Recorder (FDR) and Cockpit Voice Recorder (CVR) were recovered by the AAIB and both recorders captured the incident.

The CVR confirmed a transmission from the aircraft previously occupying Stand 415, indicating that they were clear and had "PASSED ON TO THE NEXT POSITION". One minute later, during taxi on to the stand, the co-pilot confirmed "OK 415 TURNED ON", referring to the SEG. The FDR confirmed that G-EUOF then approached the stand with a groundspeed of around 5 kt, which slowly decayed until the aircraft stopped. Once stopped, the co-pilot mentioned "THAT SAID FIVE METRES BEFORE IT SAID STOP", referring to the remaining countdown distance on the SEG.

Airport information

Figure 1 shows the extended airbridge. Note that this figure has been constructed by 'stitching' several photographs together and hence there is some distortion of the image.

Stand 415 was the subject of an airport operator's Airside Works Instruction (AWI), which gave notification of work being carried out to replace the floors in a number of 'jetties' (airbridges) at Terminal Four. The AWI covered the period 11 to 17 February 2007 and detailed the closing and opening times for Stand 415 and the fact that, when open between 12 and 15 February, it would be restricted to a maximum aircraft size of an Airbus A321, with no jetty service.

The AWI also stated that during the night of 11 February the jetty would be extended parallel to Stand 415's clearway, that worksite protection would be put in place and that, on completion of this activity, the contractor



Figure 1

Extended airbridge at Stand 415

would inform the airport's Airside Operations Safety Unit (AOSU) that the stand was ready for inspection and re-opening. The AOSU was then required to inspect the stand and assess the maximum size of aircraft that could use it with this arrangement. That information was then to be passed to the airline operator via the airport operator's Senior Operations Controller.

The AWI emphasised that for the period 12 to 15 February:

'a Leader (provided by AOSU) will be required to marshal ALL live arrivals on to the stand while the jetty is positioned parallel to the clearway.'

A marshaller was initially nominated for G-EUOF's arrival on Stand 415 but was then recalled to the AOSU for a shift changeover before being able to provide the service.

The UK Aeronautical Information Publication (AIP) entry for London Heathrow contained the advice:

'Pilots should not enter a stand unless the Stand Entry Guidance System is illuminated or a marshaller has signalled clearance to proceed.'

It also advised:

'Stand Entry Guidance is provided by APIS/APS, AGNIS/PAPA, AGNIS/Mirror, or AGNIS/Stop Arrow (painted on the apron), or Safedock. The type of stopping guidance is marked beside the APIS/APS, AGNIS or Safedock unit at the head of the stand.'

'Flight crew should be aware that the SEG systems have emergency 'stop' buttons located at apron level and in the airbridges. Activation by ground personnel of any of these buttons will cut the power to the SEG and additionally activate a flashing 'STOP' message at the head of the stand within the pilot's line of sight. When using AGNIS/PAPA, AGNIS/Mirror or AGNIS/Stop Arrow, a member of the aircrew should keep the emergency STOP sign within his/her line of sight during the final moments of the parking manoeuvre.'

There was no information in the Notices to Airmen (NOTAMs) current at the time to advise the flight crew of the requirement for a marshaller to meet 'live' aircraft arrivals on Stand 415. Nor was there any information in the airline operator's briefing material for flight crew. This was because the procedures detailed in the AIP

provided for stand entry guidance by a marshaller or the SEG system.

Airline operator

The airline operator had been advised on 9 February of the work planned for Stand 415. For three days, from 0430 hrs on 12 February, the stand would be restricted to aircraft of the size of an A321 (or smaller); that the jetty would be extended parallel to the stand clearway; that there would be no jetty service, and that all 'live' arrivals would be marshalled.

The airline operator held a conference call at 0730 hrs on 12 February which included the operator's Heathrow Airport Centre (APC) and the operator's Turn Round Shift Manager (TRSM) at Terminal Four. The Terminal Four TRSM later stated that she had been advised that Stand 415 was restricted to A319 aircraft and the A320/A321 aircraft used by one of her company's franchise operators. However, she did not recall being told that aircraft would be marshalled on to the stand.

After G-EUOF had landed, but before it had taxied on to Stand 415, the TRM, who had been allocated that flight number and told that the aircraft was an A319, walked from the operator's Terminal Four office to Stand 415. She checked that the stand was clear of equipment, entered the aircraft type details into the Stand Entry Guidance (SEG) system and switched the system on, confirming that the lights were illuminating correctly. She then noticed that the jetty was extended out to the side of the stand and went back into the terminal building to check on the computer, at the TRM's desk, to see whether the stand required a marshaller. A colleague of hers was standing next to the computer screen and, in response to the TRM's enquiry, advised her that the computer only indicated that the jetty was unserviceable. However, that colleague had dispatched the previous aircraft, another A320 series

aircraft, to depart from the stand. That aircraft had earlier been towed on to the stand before being pushed back off it, and the colleague had noticed that when it was pushed back its left wing had been close to the airbridge. In the light of that, he expressed the opinion that a marshaller might be necessary for the inbound aircraft. They both returned to stand 415 to see if a marshaller was available on the ramp. On arrival they found no marshaller but saw G-EUOF taxiing on to the stand. Realising that the aircraft's left wing was going to strike the jetty, the TRM tried to catch the attention of the commander of the aircraft using the 'crossed arms' stop signal, while her colleague activated the stop button on the SEG.

Procedures - flight crew

The operator's Flight Crew Orders for the A319 fleet gave the following advice for parking an aircraft on stand:

'When approaching the assigned parking stand, Flight Crew must take particular care to ensure that the aeroplane may be parked safely....

The illumination or activation of any guidance system is not a dependable indication that the stand is clear for use. If the aeroplane cannot be parked safely, then it must be brought to a halt and any obstruction removed before proceeding.

If there is no SEG, or if the system is either unserviceable or not calibrated for the aircraft type, then the aeroplane must be marshalled on to stand. Remote holding stands may have specific published procedures.

Whenever a "dynamic" (e.g. APIS) guidance system is employed on a stand, Flight Crew should ensure that the system is operating and indicating

the correct aircraft type before final alignment onto the stand centerline.'

The cautionary guidance in this extract reflects the advice given in the UK Civil Aviation Publication (CAP) 637, entitled *Visual Aids Handbook*, which states:

*'A pilot **should not** assume that a stand is safe to enter simply because the stand (A)VDGS [(Advanced) Visual Docking Guidance System] is active or lit. Where ground handling personnel are not present on the stand or if the pilot has any doubt about the position of any equipment on **or NEAR** to the stand, the aircraft should be stopped immediately and assistance requested.'*

During the investigation, it was noted that the left wing tip was difficult to see from the commander's seat on the flight deck: this was particularly relevant as his concentration would have been centred on the information being displayed on the SEG system.

Procedures - ground crew

The airport operator had issued:

'Stand Entry Guidance and Aircraft Arrival Procedures, including Marshalling of Aircraft' in an Operational Safety Instruction. This Instruction detailed 'the responsibilities of Airline and Ground Handling staff with regard to the operation of Stand Entry Guidance (SEG), and to advise airside users of the availability of a marshalling service when the SEG is not available.'

In accordance with the guidance in the Operational Safety Instruction, the airline operator's Standard Operating Procedure (SOP) for TRMs at Heathrow Airport attending aircraft arrivals on stands equipped with an airbridge included the instructions that at:

'ETA – 10 minutes' the TRM was to 'ensure stand clear of obstructions/air-bridge correctly parked;' and at 'ETA – 1 minute' the TRM would 'monitor the arrival on stand, TRM positioned by Emergency stop button on ramp.'

The TRM had been employed in the role since completing her training in March 2006. Since then she had known aircraft to be marshalled on to stands frequently.

Previous event

The operator was the subject of a Safety Recommendation by the AAIB in a report on a previous event in which another of their aircraft was damaged while taxiing on to a stand at Heathrow Airport (see AAIB Bulletin No: 5/2005, reference G-BNLG). The AAIB's Safety Recommendation 2005-020 recommended that the operator:

'should require that a member of their ground crew assumes the responsibility of being adjacent to the ground level emergency STOP light button and of monitoring the arrival of the aircraft onto the stand, whenever ground crews are present on a stand whilst an aircraft is manoeuvring to park.'

This is reflected in the SOPs for TRMs at London Heathrow.

Subsequent actions

Since the incident the airline operator has introduced measures to keep TRMs informed of the restrictions on the use of stands and of the relevant aspects of the airport operator's Airside Works programme. This information is conveyed through the airline operator's computer system to which TRMs have access, daily conference calls and the weekly distribution of the airport operator's Airside Works programme within the airline.

The airline has also reiterated to its staff the SOP requirement for TRMs to be positioned next to the emergency STOP light button on a stand while an aircraft is manoeuvring to park.

Discussion

The airport operator had advised the airline operator and the AOSU, in advance, of the work being undertaken on Stand 415 and the fact that the size of aircraft using the stand would be limited during the period specified. Also, they were informed that 'permitted' aircraft would be marshalled on to the stand. This information did not filter down to the TRM or the flight crew on board the aircraft but, within their respective procedures, there were measures that could have prevented the incident.

The flight crew considered the proximity of the airbridge. However, in the absence of any advice to the contrary, the illumination of the SEG system, with the appropriate information, provided them with the necessary clearance to continue to taxi on to the stand. Cautionary advice reminds pilots that 'illumination or activation of any guidance system is not a dependable indication that the stand is clear for use'. It was noted however, as a contributory factor, that it was difficult for the commander to see the aircraft's left wing tip from his position on the flight deck, from where his attention was focussed on the SEG system ahead of him as he taxied forward towards the stop position.

After the TRM had switched on the SEG system, she pursued her concern about the position of the airbridge. Having resolved that a marshaller might be needed, and finding none present on the stand, she and her colleague then took the appropriate actions to stop the aircraft, before it suffered any damage, when it became apparent that the aircraft's left wing tip was about to strike the airbridge. If the SEG system had been disabled for the period that this restriction was in place, the chain of events which led to this incident would have been broken.

The airline operator's subsequent actions have addressed the shortfall in communication which led to the TRM's lack of guidance on the requirement for all 'live' arrivals to be marshalled on to Stand 415. It is considered that the airport operator should implement a policy for disabling the SEG system on any stand which has restrictions placed on its use, to avoid the possibility of similar confusion in the future.

Safety Recommendation 2007-102

It is recommended that the airport operator, Heathrow Airport Limited, should implement a policy to disable the Stand Entry Guidance system on any stand which has restrictions placed on its use.