

INCIDENT

Aircraft Type and Registration:	Boeing 757-3CQ, G-JMAB	
No & Type of Engines:	2 Rolls-Royce RB211-535E4-B-37 turbofan engines	
Year of Manufacture:	2001	
Date & Time (UTC):	12 December 2007 at 1935 hrs	
Location:	Stand 32, Manchester Airport	
Type of Flight:	Commercial Air Transport (Passenger)	
Persons on Board:	Crew - 10	Passengers - 283
Injuries:	Crew - None	Passengers - None
Nature of Damage:	Front of No 1 engine nacelle dented at one o'clock position	
Commander's Licence:	Airline Transport Pilot's Licence	
Commander's Age:	48 years	
Commander's Flying Experience:	10,048 hours (of which 6,119 were on type) Last 90 days - 94 hours Last 28 days - 55 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

Synopsis

Whilst approaching its allocated parking position, the aircraft sustained damage to the port engine when it struck a stationary airbridge that was parked incorrectly. An AAIB investigation into a similar occurrence in 2003 resulted in Safety Recommendations concerning the remote activation of stand entry docking guidance by Apron Control. The airport operator accepted these recommendations and proposed safety action but this appears to have been ineffective. Therefore, one further Safety Recommendation is made to address the same issue.

History of the flight

The aircraft landed at Manchester International Airport at 1935 hrs following an uneventful flight and was instructed to park on Stand 32. Due to commitments elsewhere on the airport, a dispatcher allocated to attend the arriving aircraft was unable to reach the stand before the aircraft. Stand guidance was activated remotely by Apron Control. The commander manoeuvred the aircraft from the taxiway centreline to the centreline of the stand using the azimuth guidance system and commenced gentle braking to stop the aircraft as it approached the indicated stopping position. Deceleration was more pronounced than he expected and the aircraft stopped approximately 3 ft short of the indicated position.

The pilots shut down the engines and the passengers and crew disembarked without further incident. The left engine intake cowling had impacted the outer air bridge. The Aerodrome Fire fighting and Rescue Service (AFRS) was not called and did not attend.

Damage to aircraft

Maintenance personnel assessed the damage to the front upper intake lip of the intake cowl of the left engine as beyond allowable limits and replaced the cowling in accordance with the Aircraft Maintenance Manual. The engine strut, fairings, structure, mounts and fittings were also inspected but found to be undamaged.

Aircraft information

The operator stated that the aircraft was fully serviceable prior to the accident. Following replacement of the damaged engine cowl, the aircraft was declared serviceable and returned to normal operations.

Stand Entry Docking Guidance

Stand 32 was equipped with an Aircraft Guidance for Nose-In Stands (AGNIS) system to provide centreline guidance and a Parallax Aircraft Parking Aid (PAPA) to provide stopping guidance. The pilots used a commercially available aerodrome guide which contained a description of these systems (see Figure 2).

Recorded information

Analysis of recorded flight data, conducted by the aircraft operator, showed that the aircraft approached Stand 32 at a ground speed of 12 kt prior to commencing the final turn on to the stand centreline, and decelerated progressively to 3.75 kt immediately before impact with the airbridge. Photographs taken immediately afterwards show that the aircraft stopped approximately 3 ft short of the position indicated by the PAPA.



Figure 1

Damage to engine cowling

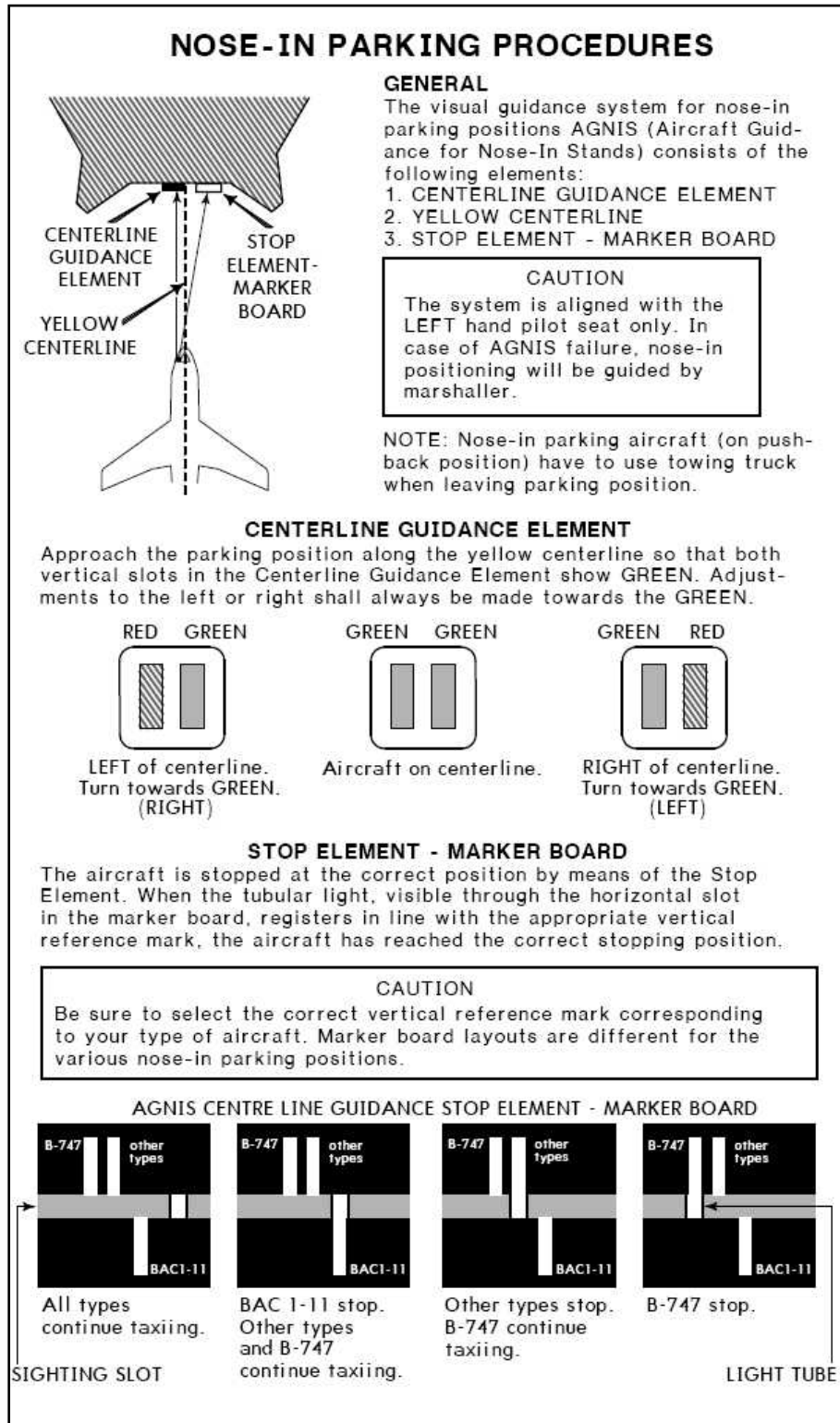


Figure 2

Airbridge management

When parked correctly the airbridge was positioned so that its main wheels remained wholly within a circle painted on the apron surface for this purpose, giving adequate clearance between the airbridge and arriving or departing aircraft. G-JMAB was the first aircraft allocated this stand and photographic evidence indicated that the airbridge was parked incorrectly during its arrival.

The outer airbridge on Stand 32 had been subject to maintenance work on the two previous days and was handed over to the airport operator at 1440 hrs on the day of the occurrence. In the absence of relevant procedures the airport operator did not check

physically that the airbridge was serviceable or that it had been returned to its correct parking position. The Apron Controller was unable to check visually, prior to its use, that the stand was clear and that its guidance system and airbridge were properly positioned and serviceable.

In its own investigation, the airport operator stated that there was no written procedure for the management of stand closures but noted that the handling agent did not check the position of the outer airbridge though required to do so by local procedures. It was also concerned that the AFRS had not been called to attend.



Correct position of airbridge wheels

Actual position of airbridge wheels

Figure 3
Parked position of airbridge

Airside safety management

Civil Aviation Publication (CAP) 642 – ‘*Airside Safety Management*’ provides advice and guidance on safe operating practices for airside operations. It does not contain requirements. Paragraph 2 of section 6.3 entitled ‘“Ownership” of Stand/Parking Bay’ states, in part:

‘When a stand is allocated for use to an aircraft operator and the arrival of their aircraft on stand is imminent, it is usually the responsibility of the handling staff to ensure that the stand and clearways are free from obstruction by vehicles or equipment. These staff should also ensure that the airbridge(s) is (are) fully retracted or correctly parked with the drive wheels in the parking box provided (see paragraphs 9.7 to 9.10) before the arrival of the aircraft. These actions must be completed by the handler before the VDGS is switched on. Switching on the VDGS will normally signify to the aircraft commander that these actions have been completed and it is safe for the aircraft to enter the stand.’

Stand 32 is at the western end of the Pier C extension to Terminal 1 at Manchester Airport. The apron surrounding Pier C is bounded at its western end by a marked roadway and Taxiway D, but there are no surface markings to define its boundaries with the adjacent Stands 28 and 31. Paragraph 7 of section 6.9 of CAP 642, entitled ‘*Signs Markings and Guidance*’ states:

‘Where CAP 168 does not give suitable guidance, signs and markings should adhere to an alternative standard, such as those described in the IATA Apron Markings and Signs Handbook, wherever possible.’

Although there is no published requirement for such markings, the Aerodrome Standards office of the CAA responsible for inspecting Manchester Airport stated that the airport operator is in the process of defining standards for such markings.

Previous occurrence

The AAIB published in its March 2003 Bulletin a report¹ of the investigation into a similar occurrence involving an aircraft arriving on Stand 6 at Manchester Airport. Following a technical problem, the airbridge on Stand 6 could not be parked in the correct position. From the remote location of Apron Control, the stand allocator was not aware that Stand 6 was obstructed, allocated it to an arriving aircraft and activated the Stand Entry Docking Guidance (SEDG) lighting. The marshaller arrived at the stand when the aircraft was already manoeuvring to park as directed by the illuminated SEDG. Neither the aircraft commander nor the marshaller noticed that the airbridge was incorrectly parked until it was too late to prevent the upper surface of the aircraft’s left engine cowling striking the underside of the airbridge.

In relation to activation of SEDG the AAIB report referred to Appendix B, paragraph 3 of CAP 642, which stated:

‘The system is switched on by an airline or handling staff. In the case of airbridge served stands, one set of VDE² control switches are mounted in a panel in the airbridge cab; a second set of switches are mounted in a conspicuously marked panel in a prominent position at the head of the stand. Either set of switches will operate the equipment and on all pier served stands timer

Footnote

¹ AAIB reference EW/C2003/07/09.

² Visual Docking Equipment (VDE) is the term used in CAP 642 to refer to SEDG.

switches are used which automatically switch off the VDE after 10 minutes. On non pier served stands a single set of switches is provided, mounted on a conspicuously marked panel at the head of the stand; the VDE on these stands do not have timer switches and the VDE must be switched off when the aircraft is safely parked on the stand.

Airline or handling staff must ensure that the stand is unobstructed by vehicles or equipment and that the airbridge is retracted and correctly parked before the arrival of the aircraft and before switching on the VDGS³. Switching on the VDGS signifies to the aircraft commander that these actions have been completed and it is safe for the aircraft to enter the stand. Once the VDGS has been switched on, the person responsible for stand safety and VDGS operation must not leave the stand until the aircraft is parked, unless the VDGS is switched off again.'

Safety Recommendation 2003-132

For the airbridges and stands serving Terminals 1 and 3, Manchester Airport Plc should, within a reasonable timescale, fund and develop Stand Entry Docking Guidance lighting controls and associated procedures that comply with the advice and guidance contained in Civil Aviation Publication (CAP) 642.'

The report stated:

'On 12 January 2004 a representative of Manchester Airport plc notified the AAIB that the airport accepted the safety recommendations. Budgetary provision had been made for a program of works and an investigation implemented into the engineering and electronic functions of the current Stand Entry Docking Guidance systems, encompassing all three Terminals, to define the scope of the proposed works.'

Two Safety Recommendations were made to Manchester Airport which addressed control of the SEDG systems:

'Safety Recommendation 2003-131

Manchester Airport plc should ensure that Stand Entry Docking Guidance lighting is not activated by Apron Control until a positive communication has taken place with staff at the stand confirming that the stand is clear. Until the aircraft has parked and shut down its engines, those staff should remain available at the stand to inform Apron Control if the stand subsequently becomes obstructed.'

A third Safety Recommendation addressed to the CAA proposed an expansion of the UK aerodrome audit process to include the control and use of SEDG systems. The CAA accepted this recommendation.

Analysis

No procedure existed for inspecting the proper arrangement of the stand and its equipment prior to its return to service after maintenance. Accordingly, an opportunity was lost to check that the airbridge was parked correctly.

Illumination of stand guidance is understood by pilots to indicate that the stand is ready to accept arriving aircraft. In this case, however, the stand guidance was activated by Apron Control, from a location where the

Footnote

³ Visual Display Guidance System (VDGS) is the term used in CAP 642 to refer to SEDG.

stand could not be checked visually. When a dispatcher or other appropriate member of ground staff is present it may be possible for that member of staff to activate the emergency stop signal should it appear that the aircraft is endangered in some way. The dispatcher reached the stand after the occurrence and could not therefore perform this function.

Safety action

In relation to the occurrence to G-JMAB, the airport operator acknowledged that previous safety action had not been effective and in its subsequent report proposed the following corrective actions:

1. Airfield Operations to produce a Local Operating Procedure for the Management of Stand Closures and Restrictions
2. Airfield Operations to produce a Local Operating Procedure for Emergency Response to Apron Incidents
3. Dispatcher to undergo Airbridge revalidation
4. Handling agent to brief staff on the procedure for checking stands prior to the arrival of an aircraft

On 2 March 2008, in response to item 1 above, the airport operator issued Local Operating Procedure AOP 018/2008, entitled – ‘Stand Closures & Restrictions’. Under the heading ‘Reinstatement of Stands for Operational Use’ it stated:

‘Airfield Operations are responsible for the reinstatement of closed or restricted stands. The reinstatement of a stand is subject to a formal inspection by competent Airfield Operations personnel and positive confirmation that all

stand facilities, including SEDGS and airbridges have been tested and reinstated by the relevant Maintenance Team.

When Airfield Operations are satisfied the stand is serviceable, the MAPSI form⁴ confirming the original closure should be completed by the Airfield Duty Manager or Airfield Duty Officer (Confirmation of Reinstatement) and faxed to Apron Control on ext. 2143.

Under no circumstances should Apron Control accept any closed stand for operational use until they are in receipt of the completed MAPSI form applicable to that stand.’

The airport operator also issued Local Operating Procedure AOP 007/2007 in response to item 2, which was intended to address the concern that the AFRS had not been called to attend the incident. The operator noted that the dispatcher had undergone “driver training” for the purpose of airbridge revalidation on 13 December 2007. In relation to item 4 the handling agent stated that dispatchers are trained “via Manchester Airport’s own training department” and that “performance of this duty is monitored by means of turnaround checks against a checklist”. There were, however, no surface markings to define the apron’s boundaries with the adjacent Stands 28 and 31. Without knowing which part of the apron constitutes a particular stand, a dispatcher cannot determine that the stand is clear. Accordingly, the airport operator stated that it intends to define suitable standards for such markings, but noted that the lack of such markings was not a factor in this incident.

Footnote

⁴ The name given to the airport operator’s form used for ‘Stand Closure & Rectification Notification’.

Although the proposed safety action addressed the specific cause of the incident involving G-JMAB it did not address the shortcomings of the practice of activating the SEDG remotely which was the subject of Safety Recommendations 2003-131 and 132, both of which were accepted by the airport operator. Accordingly the following Safety Recommendation is made.

Safety Recommendation 2008–025

It is recommended that Manchester Airport Plc review its response to:

Safety Recommendation 2003–131: *‘Manchester Airport plc should ensure that Stand Entry Docking Guidance lighting is not activated by Apron Control until a positive communication has taken place with staff*

at the stand confirming that the stand is clear. Until the aircraft has parked and shut down its engines, those staff should remain available at the stand to inform Apron Control if the stand subsequently becomes obstructed.’

and:

Safety Recommendation 2003–132: *‘For the airbridges and stands serving Terminals 1 and 3, Manchester Airport Plc should, within a reasonable timescale, fund and develop Stand Entry Docking Guidance lighting controls and associated procedures that comply with the advice and guidance contained in Civil Aviation Publication (CAP) 642.’*

to ensure that, having accepted these recommendations, it takes the proper action to address them.