

INCIDENT

Aircraft Type and Registration:	Boeing 747-300, ZS-SAT	
No & Type of Engines:	4 Pratt & Whitney JT9 7R4 G2 turbofan engines	
Year of Manufacture:	1982	
Date & Time (UTC):	4 December 1992 at 0645 hrs	
Location:	London Heathrow Airport, Stand B25	
Type of Flight:	Public Transport	
Persons on Board:	Crew - 25	Passengers - 280
Injuries:	Crew -None	Passengers - None
Nature of Damage:	Left wing-to-body fairing holed	
Commander's Licence:	Airline Transport Pilot's Licence	
Commander's Age:	51 years	
Commander's Flying Experience:	Approximately 15,000 hours (of which 4,000 were on type)	
Information Source:	AAIB Field Investigation	

Arrival of Aircraft

After an overnight flight from South Africa, the crew of SAA234 contacted the handling agent about 30 minutes before arrival time and was allocated B25 as the parking stand. After an uneventful landing on 27R the aircraft turned off the runway and on contacting Ground Control, the crew was again told that the stand was B25. The aircraft entered Bravo parking area and the taxi lights were turned off as the aircraft turned on to the centre line of the stand. The Flight Crew noticed steps in the stand area but, as the Azimuth Guidance For Nose-In Stand (AGNIS) and Parallax Aircraft Parking Aid (PAPA) lights were on, assumed the steps were for disembarkation. Taxi speed was no more than 2 kt and as the aircraft came to a stop, at the correct position according to the AGNIS/PAPA lights, a voice (ground engineer) came on the service interphone telling the Captain to "Cut No 2 engine --- Cut all engines". The Captain did so and on asking the reason, was informed that the aircraft had collided with some steps. At the time it was dark and the stand lights were on.

The CVR was replayed at Farnborough, but was found to have erased the relevant information as power had been left on for more than 30 minutes after the incident.

Stand Availability

In the early hours of the morning of 4 December a Boeing 757, parked on stand B25 at Terminal 1, was required to be moved to stand C24. Prior to repositioning the aircraft, the towing crew attempted to start and move a set of super stairs (self-powered passenger stairs) parked on the apron, but were prevented from doing so by a defective electrical interlock. The Boeing 757 was reversed off the stand, with the super stairs still in place. The super stairs were reported as unserviceable to the Aircraft Movements Control Room supervisor, who passed on the message to the Motor Transport workshops, informing them that the removal of the stairs was a priority task as they were obstructing the stand. However, the location was given as stand C24 rather than B25, consequently the Motor Transport workshop personnel were unable to find the stairs, and the action to remove them was abandoned without the obstructed stand B25 being declared as unavailable.

Stand Equipment

The B25 stand, along with most stands equipped with Passenger Loading Bridges, has a Stand Entry Guidance (SEG) system, see Photograph. This comprises an AGNIS, a PAPA, and a red STOP SHORT light. AGNIS consists of a unit emitting red and/or green light signals used to centreline the aircraft - mounted on the front of the pier at pilot's eye level - aligned for interpretation by the pilot in the left hand seat. PAPA consists of a board with reference marks allied to specific aircraft types, and a horizontal slot running across its centre with a fluorescent tube mounted vertically behind; correct stopping position is reached when the tubular light registers in line with the appropriate aircraft reference mark. The STOP SHORT light is displayed above the AGNIS lights. Whenever this STOP SHORT light is illuminated, in the absence of any guidance, the crew should stop the aircraft short in a position which is safe and clear of any obstruction on the stand. The main SEG switches are located at the lounge level; a second switch to activate the STOP SHORT light, is located outside at apron level.

Operating Procedures

The regulations for the operation of the Stand Entry Guidance system are contained in Director's Operational Instruction (DOI) 19/86, issued on 21 April 1986. This DOI instructs airline staff to ensure that the stand is unobstructed before switching on the SEG, and also identifies the STOP SHORT light switches at apron level. However this document refers to the STOP SHORT lights in relation to Passenger Loading Bridge unserviceability and Passenger Loading Bridge in extended position; there

is no reference to emergency stop systems. The DOI was available, on request, to the airline's dispatchers at Terminal 1, but had not been seen by the dispatcher involved in the incident.

The duties of a Passenger Loading Bridge operator are defined by Heathrow Airport Limited (HAL) in Operational Safety Instruction (OSI) 38/92 issued on 28 August 1992. The OSI was made available through a notice board display to the aircraft dispatcher involved in this incident, but no formal system existed to ensure that the contents of the OSI were assimilated.

The airline's present training syllabus requires the dispatcher to take the following actions, in the order listed:

- Check Stand for obstructions.
- Check Passenger Loading Bridge.
- Turn on SEG if previous two checks were satisfactory.

Dispatcher's Actions

The dispatcher arrived at the foot of the Passenger Loading Bridge at approximately 0637 hrs and noticed that some equipment, including the super stairs, was obstructing the stand; he therefore made calls to both Domestic and International Loading, to remove the stairs, and continued up and along the Passenger Loading Bridge to the lounge, where he switched on the SEG. He returned to the head of the Bridge and waited for a few minutes for someone to remove the stairs; as this did not happen he decided to move them himself. He entered the cab, switched on the lights and made several unsuccessful attempts to move the vehicle. He then saw the aircraft approach and turn towards the stand, so he left the vehicle and tried to attract the Captain's attention.

A ground engineer, who had been assisting the dispatcher with the super stairs, also tried to stop the aircraft by running well in front of the aircraft, flashing his torch and waving. This did not work, so he ran backwards in front of the nose gear, opened a panel and plugged his headset in. However, his actions were too late to prevent the aircraft from striking the stairs.

The dispatcher was aware that a STOP SHORT light switch existed at apron level, but thought that the switch was no longer functioning, having been superseded by the controls at lounge level. A survey of all Terminal 1 in-use stands equipped with Passenger Loading Bridges showed that all except one had STOP SHORT lights fitted with serviceable apron level switches. A poll of 14 of the airline's dispatchers revealed that half of them were unaware of the apron level STOP SHORT light switches and

that, of the remainder, some thought the switches had been disabled. The use of the STOP SHORT light was not included in the ground engineer's training.

Requirement for an Emergency Stop Procedure

AAIB bulletin 8/92, referring to an accident involving a Boeing 747SP, stated, "There is currently no device for signalling to crews that they have moved too far forward, nor any form of 'emergency stop' signal which may be activated by the ground staff in the event of an unforeseen problem on the parking area. In the absence of any manual marshalling guidance, ultimately it is left to the pilots to determine if the parking stand is unobstructed prior to commencing to park. It is also impractical in large wide-body aircraft such as the Boeing 747 to ensure clearance from close in obstacles around the parking area, due to the high flight position and the lack of all round visibility from wing tip to wing tip". As a result Recommendation 92-52 was made in August 1992; this proposed that, "The CAA should begin a consultative process with aerodrome operators, with a view to the introduction of a prominent 'emergency stop' indicating system for each self manoeuvring stand, to be activated in the event of an unforeseen occurrence where the aircraft is required to stop urgently".

The CAA project group formed to address Recommendation 92-52 have stated their intention to arrange a date early in the new year to meet with the British Airports Authority.

Licensing of Despatchers

Heathrow Airport Limited require that a Passenger Loading Bridge operator be licensed; to obtain the licence he must undergo training by a HAL approved airline instructor before being tested by HAL, and issued with a licence if successful. Passenger Loading Bridge licences originally required revalidation every 5 years by the airline instructor, however, the revalidation frequency had recently been increased to two years. An important aspect of the revalidation was to provide instruction on new equipment and procedures.

It was noted that there was no revalidation requirement for the instructors, and that HAL only maintain a list of those personnel initially trained and issued with licences. They do not maintain records of revalidation; the revalidation, and the recording of same has been delegated to individual airlines.

The dispatcher is responsible for all non-flight crew activities on the stand during the arrival and departure of the aircraft. His responsibilities, therefore, extend beyond the duties covered by the licence.

The despatcher involved in this incident had been issued with a licence in 1975, and the airline held records showing that he had been revalidated in 1984; he had also received refresher training in the last six months, along with 79 of the total of the airline's 88 despatchers, to enable him to use the new facilities on pier 4A. This pier is not currently fitted with apron level STOP SHORT light switches, and the training did not include use of the apron level switches, or the actions to be taken in the event of an obstructed apron. The airline considered that this refresher training satisfied the HAL requirement for revalidation of the despatcher's licence.

Quality Auditing

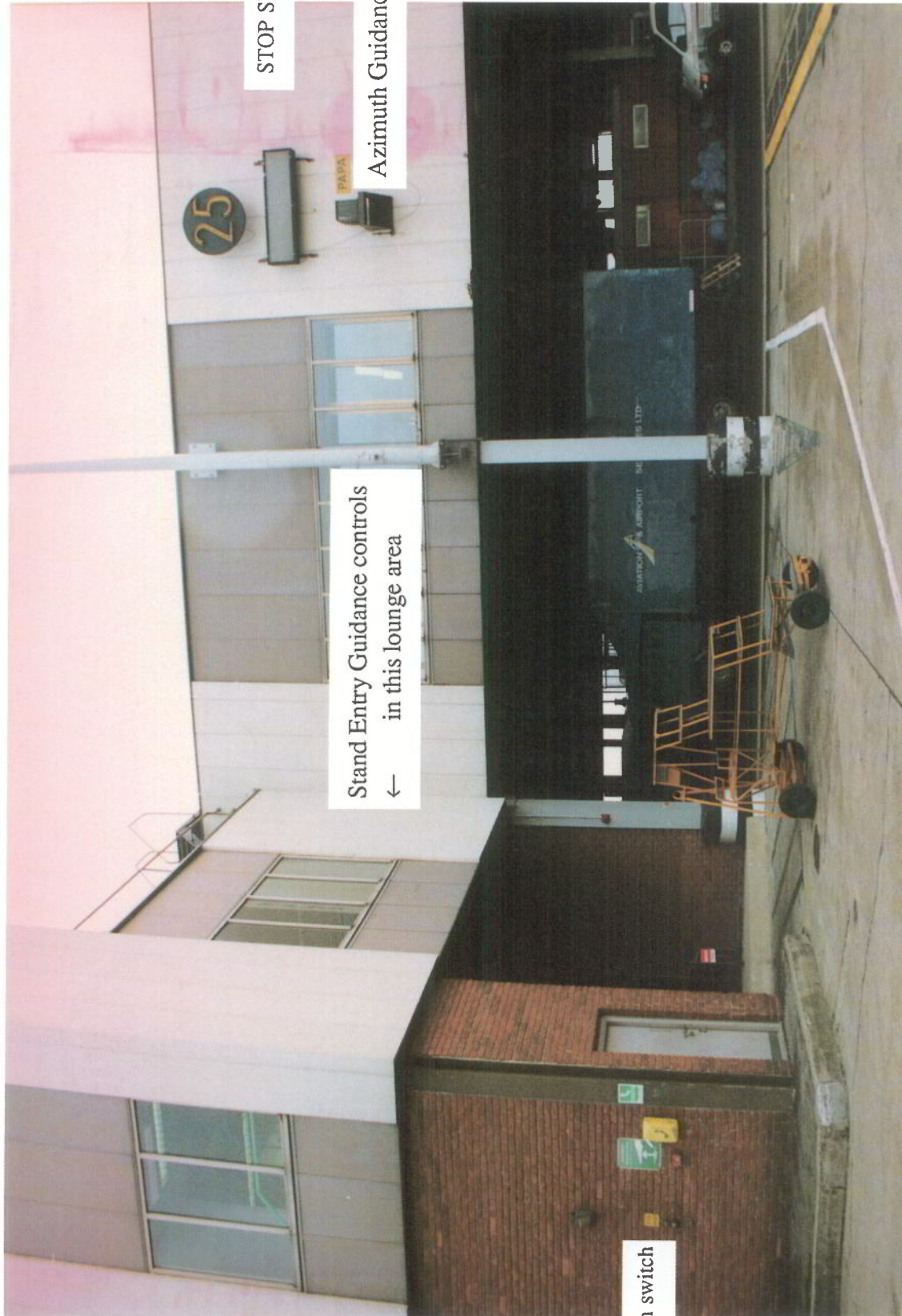
HAL do not monitor the quality of airlines' operating standards, but the despatching function had been introduced into the airline's Quality Audit programme in the last 6 months. An independent audit had been completed, as well as product sampling carried out by local management within their own area. None of these activities covered the operation of the apron level switches, or the actions to be taken in the event of an obstructed apron.

Safety Recommendations

93-16 Documentation HAL should review the Passenger Loading Bridge operator licensing procedures to ensure that a central record is kept of validation and revalidation dates and to ensure that all licence holders, and instructors, are trained and updated in all the equipment they are required to operate. (Issued 18 March 1993)

93-17 Stand Entry Guidance (SEG) Controls HAL should review the need to provide SEG controls, at the despatcher's station, at the end of the Passenger Loading Bridges. (Issued 18 March 1993)

93-18 Emergency Stop System The CAA should expedite their implementation of Recommendation 92-52, which stated: "The CAA should begin a consultative process with aerodrome operators, with a view to the introduction of a prominent 'emergency stop' indicating system for each self manoeuvring stand, to be activated in the event of an unforeseen occurrence where the aircraft is required to stop urgently". The CAA should include in their consultations the issues raised in Recommendations 93-16 and 93-17 above. (Issued 18 March 1993)



STOP SHORT sign

Stand Entry Guidance controls
← in this lounge area

Azimuth Guidance - Nose In Stands

STOP SHORT sign switch

Stand centreline

PART OF STAND B25 STAND ENTRY GUIDANCE SYSTEM
(PAPA not shown, Passenger Loading Bridge behind photographer)