INCIDENT

Aircraft Type and Registration:	Boeing 747-443, G-VLIP
No & type of Engines:	4 CF6-80C2B1F turbofan engines
Year of Manufacture:	2001
Date & Time (UTC):	5 July 2006 at 0905 hrs
Location:	Taxiway Lima, London (Gatwick) Airport
Type of Flight:	Public Transport (Passenger)
Persons on Board:	Crew - 18 Passengers - 289
Injuries:	Crew - None Passengers - None
Nature of Damage:	Trailing edge skin of right winglet damaged
Commander's Licence:	Airline Transport Pilot's Licence
Commander's Age:	34 years
Commander's Flying Experience:	8,000 hours (of which 6,500 were on type) Last 90 days - 209 hours Last 28 days - 75 hours
Information Source:	Aircraft Accident Report Form submitted by the operator

Synopsis

The right wingtip of the aircraft collided with a blast fence when the aircraft was pushed back into an area of taxiway with insufficient clearance for its wingspan. This and other large aircraft types were prohibited from parking on stands in this area but not from pushing back onto the taxiway adjacent to them. One safety recommendation was made.

History of the flight

The aircraft was parked on Stand 36 Middle at Gatwick Airport prior to departure on a scheduled passenger flight to Antigua, West Indies. The flight crew contacted Ground Movement Control (GMC) to request permission to push back from the stand and start engines. GMC instructed the aircraft to push back and requested that a "long push" be conducted to allow an approaching aircraft to manoeuvre onto the stand as soon as it was vacated.

The pushback was conducted by five ground personnel. Two 'wing walkers', responsible for observing wingtip clearance, a tug driver and a driver's assistant were provided by a ground handling organisation contracted to the aircraft operator. A ground engineer employed by the operator also attended the pushback and was able to communicate with the flight crew using a headset.

During the pushback the wing walkers accompanied the aircraft until it crossed the line indicating the boundary between the stand and the taxiway. The pushback

then proceeded with the engineer facing the aircraft and walking beside the nose wheel. The tug driver continued to push the aircraft clockwise along Taxiway Lima towards a position abeam Stand 37 until he was satisfied that G-VLIP was clear of the aircraft which was approaching the vacated stand. Upon confirmation that the pushback was complete the commander applied the parking brake and the engineer gave permission to the tug crew to disconnect the towbar and return to the stand. The flight crew then completed their taxi checks and the engineer unplugged his headset from the aircraft and returned to the stand.

After confirming with the engineer by hand signal that the nosewheel steering bypass pin had been removed, the flight crew requested taxi instructions from GMC. At that moment the flight crew received an interphone call from a cabin crew member stating that the right wing tip had collided with the blast fence located alongside the taxiway. This had been noted by a passenger sitting in a window seat on the right hand side of the aircraft. The flight crew cancelled the taxi request, advising GMC that the aircraft had a technical problem, and arranged for the engineer to return to the aircraft to confirm the collision.

The engineer confirmed that the wing tip had collided with the blast fence. A local emergency was initiated by GMC and the incident was attended by the Aerodrome Fire and Rescue Service and police. The aircraft was then towed to Stand 34 where the passengers disembarked.

Damage to aircraft

The trailing edge of the right winglet had sustained skin damage in its collision with the blast fence. An inspection of the surrounding structure revealed no further damage and the aircraft was returned to service after repair.

Airport information

Stands 31 to 38 are arranged around the circular head of Pier 3, which is located at the north-west end of a spur attached to the South Terminal at Gatwick Airport (see Figure 1). To increase parking flexibility, each stand has Left (L) and Right (R) parking positions, which can be occupied simultaneously by narrow-body aircraft, and a Middle parking lane which is used by single wide-body aircraft. Aircraft manoeuvre to and from the stands via Taxiway Lima, which runs circumferentially around the Pier 3 apron area. The north-east segment of this taxiway is bounded by a blast fence which protects adjacent roadways and buildings.

The edition of the UK Aeronautical Information Package (AIP) current at the time of the incident stated:

> *'Operators of aircraft with wingspans in excess of 61 m must not use Taxiway Lima beyond stand 36 to access stands 37 and 38.'*

Aircraft were not specifically prohibited from pushing back onto the taxiway adjacent to Stands 37 and 38.

Pedestrians were not permitted to enter the taxiway area from the apron associated with each stand. However, ground handling staff involved in aircraft pushback operations were not specifically precluded from entering the taxiway in the course of their duties. Nevertheless, the general prohibition on pedestrians entering this area was widely interpreted to mean that 'wing walkers', for example, were not allowed to do so. Consequently, the 'wing walkers' involved in the pushback of G-VLIP did not leave the stand area and were not able to give guidance to the tug crew as the right wing tip approached the blast fence.

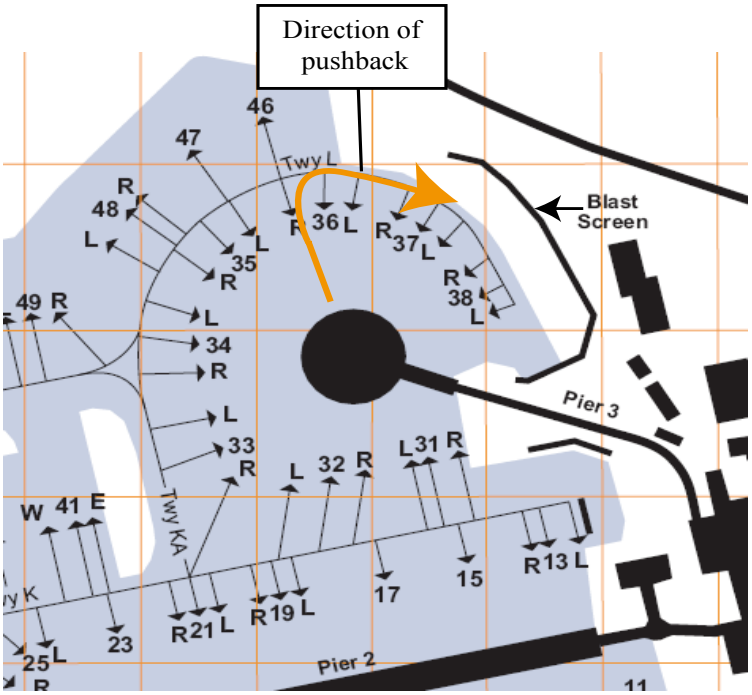

Figure 1

Pier 3, Stands 31-38 and blast fence

Pushback operations

Tug Driver

Tug drivers will commence pushback on receipt of a 'brakes released' signal from the engineer. The tug will then push the aircraft along the stand centreline until the aircraft is clear of the apron and can be manoeuvred onto the taxiway centreline. If requested to accomplish a long push the tug will continue to push the aircraft backwards along the taxiway until the driver has determined that there is sufficient room for another aircraft to turn in front of it and enter the vacated stand. There are, however, no markings on the ground or elsewhere to indicate how far the aircraft should be pushed to achieve this. On completion of the pushback the parking brakes of both the tug and the aircraft are applied and, on instruction from the flight deck, the towbar is disconnected from the aircraft and the tug and towbar are driven back to the apron. The principal duty of the tug driver's assistant is to disconnect the towbar from the aircraft.

The aircraft fuselage was positioned over the taxiway centreline when the wingtip collided with the blast fence.

Engineer

Engineers communicate with the flight crew via a headset plugged into a receptacle on the aircraft nose gear leg. When the flight crew confirm that the aircraft parking brake has been released, the engineer will communicate this to the tug driver and the pushback will begin. During the pushback the engineer will supervise aircraft engine starting. When the pushback is complete the tug driver will communicate this to the engineer who will in turn notify the flight crew and request that the aircraft parking brake be set. When instructed to do so by the flight crew, the engineer will disconnect the headset, remove the steering bypass pin and move to one side of the aircraft to confirm its removal to the flight crew. This completes his involvement in the pushback operation.

The engineer stated that on this occasion he had positioned himself on the left of the aircraft (ie on its port side) during the pushback because this would allow him to see the left wing tip as it passed behind the aircraft parked on Stand 37. He could not see the right wing tip from this position.

Wing walkers

The 'wing walkers' accompanied the aircraft until it crossed the boundary between the stand and the taxiway but, in accordance with the accepted interpretation of Airport Regulations, they did not enter the taxiway. The aircraft operator reported that when it asked for clarification of this point the airport operator stated that it would not object to 'wing walkers' entering the taxiway while carrying out their duties as part of the pushback team.

Ground Movement Control

At the time of the incident, although controllers were not permitted to allocate Stands 37 and 38 to certain aircraft types (including the Boeing 747-400), pushing such aircraft into the area of these stands was not expressly prohibited.

Perception of collision risk

Neither the flight crew nor the ground personnel involved in the pushback were aware that the wing tip had collided with the blast fence. The operator considered that the sweep of the aircraft wing together with the slope of the blast fence would make it difficult for an observer positioned at the front of the aircraft to determine the distance between the aircraft wing tip and the blast fence.

The passenger who alerted the cabin crew to the collision occupied seat 50K, a window seat on the right hand side of the cabin in line with the right wing tip.

Conclusion

The collision occurred when the aircraft was pushed back into an area of Taxiway Lima where insufficient clearance existed between the blast fence and the taxiway centreline to accommodate its wingspan. The pushback was conducted in accordance with standard procedures and the request to conduct a long push onto the taxiway area adjacent to Stands 37 and 38 was not specifically prohibited by existing local instructions. The tug driver had no means of determining when the extremities of a particular aircraft type had entered this area.

Follow-up action

On 5 July 2006 the airport operator issued a Managing Director's Instruction to all operators of large aircraft and all handling agents prohibiting pushbacks into the area of Stands 37 and 38.

> *'Aircraft with wingspan of 61 m or more (this includes B747) on Lima must not be pushed back beyond stand 37R.*

On 7 July 2006 the ground handling organisation published an instruction to all tug drivers, driver's assistants and 'wing walkers' prohibiting long pushbacks of Boeing 747 and Airbus A330 and A340 aircraft, adding:

> *'If at any time you feel that what you are being requested to do is an unsafe practice, do not hesitate to question the procedure.*
>
> *'As a guide to tug drivers, do not push the nose wheel of any wide bodied aircraft past the 36L lead in arrow, but pull forward to straighten up if necessary.'*

On 18 July 2006 the aircraft operator published the following internal notice stating:

> *'With immediate effect, long pushbacks from parking stand 36 are no longer approved. This is due to the restricted wing tip clearance between parking stands 37, 38 and the blast fence located on the opposite side of the taxiway L'.*
>
> *'Crew should no longer be requested by Ground Movement Control (ATC) to conduct a "long push" from this stand. Any request to do so should be queried with the Ground Movement Controller.'*

The aircraft operator reported that members of ground staff involved in pushback operations remained under the impression that they were prohibited from entering the manoeuvring area. 'Wing walkers' perform an important role in the safe manoeuvring of large aircraft.

Consequently, the following recommendation was made:

Safety Recommendation 2006-137

It is recommended that Gatwick Airport Limited should issue a Managing Director's Instruction or equivalent notice advising all operators and handling agents that:

a. Ground staff involved in pushback operations may enter the manoeuvring area adjacent to stands to the extent necessary to provide position guidance.

b. During pushback operations the nosewheel of any wide-bodied aircraft should not be pushed rearwards beyond the Stand 36L lead in arrow.