

DEPARTMENT OF CIVIL AVIATION

INCIDENT INVESTIGATION REPORT 80 - 2

ROYAL DUTCH AIRLINES (KLM) BOING 747 AIRCRAFT  
PH - BUN AT KUALA LUMPUR INTERNATIONAL AIRPORT  
ON 01 AUG 80.

Chief Inspector of Accidents/Safety,  
Department of Civil Aviation,  
19/20 Floor, Wisma MPI,  
Jalan Raja Chulan,  
KUALA LUMPUR 05-10

## THE INCIDENT

The aircraft, a Boeing 747, registration PH - BUN of Royal Dutch Airlines (KLM), was parked at Bay 9 of the KL International Airport on the evening of 01 Aug 80. It had landed earlier and was in transit for return onward flights to Amsterdam. The aircraft was, therefore, operating a regular public transport flight, and there were 215 passengers and 14 crew on board.

At 2056 hrs LT, the aircraft requested and was given start-up clearance. Thereafter, clearance to taxi to the holding point for Runway (Rwy) 33 was given with an advisory notice that a Cathay Pacific (CX) Tristar was taxiing into Bay 8. This clearance was acknowledged. The aircraft taxied out of Bay 9, and then turned left for the holding point of Rwy 33. As it did so, the No. 1 engine of the aircraft hit 2 of 4 metal baggage containers on trailers being towed in train by a tractor. The collision occurred at 2104 LT. The aircraft captain was informed; the aircraft shutdown and towed back to its original parking bay.

### 1. FACTUAL INFORMATION

1.1 Boeing 747 aircraft, registration PH - BUN was operated by Royal Dutch Airlines (KLM) on a regular, public transport service. On the evening of 01 Aug 80, it was parked in transit at Bay 9 of the KUL International Airport, Subang. It carried 215 passengers and 14 crew.

The aircraft requested ATC clearance for start-up, destination Bangkok, at 2056 LT. It was advised to stand-by for start-up whilst some ATC details required for en-route clearance to Bangkok was confirmed.

The aircraft was finally given start-up clearance at 2057 LT. At 2102 LT, the aircraft requested taxi clearance, and was again requested to stand-by. At 2103 LT, the aircraft was finally given taxi clearance for the holding point of RW 33. The taxi clearance included advice that a Cathay Pacific Tristar was taxiing into an adjoining Bay 8.

Sometime between 2103 and 2104 LT, the aircraft captain observed a train of 4 baggage containers being towed by a tractor pass him on the port side of the aircraft heading towards and around the corner of Bay 9. (This corner is created by a finger of temporary wall of sand-bags jutting out from the centre of the terminal building/aircraft parking area. Appendix A shows a sketch of the incident area).

After taxi clearance was received at 2103 LT, the aircraft taxied out under the guidance of a ground marshaller, who was positioned adjacent to and close to the tip of the finger of sand bags. The aircraft continued to taxi out of Bay 9 and then commenced a left turn round the temporary wall of sand-bags for the holding point of RW 33. During this cornering manoeuvre, the ground marshaller continued to signal the "All Clear-Marshalling Finished" signal.

Shortly afterwards at 2104 LT the No. 1 engine of the aircraft hit the last 2 out of 4 train of metal baggage containers. The baggage train, unknown to ATC, the marshaller and the aircraft crew, had stopped beside and at the very tip of the finger of sand-bags. The captain was informed of the collision and the aircraft was subsequently shut down and towed back to Bay 9.

1.2 INJURIES TO PERSONS

Nil.

1.3 AIRCRAFT AND OTHER DAMAGE

The aircraft sustained a 2 foot tear and some minor scratches and dents at the bottom surface of the cowling of No. 1 Engine. Two empty Cathay Pacific metal containers were similarly ripped apart by the force of the impact.

#### 1.4 PERSONNEL INFORMATION

Following the incident, the captain of PH - BUN was requested to file an ATC Incident Report. Thereafter, whilst repairs to the aircraft were effected, the crew were required on rest in order to resume flight as soon as repairs were completed. The captain of PH - BUN had been to KUL International Airport on previous occasions.

#### 1.5 AIRCRAFT INFORMATION

Not relevant to this investigation

#### 1.6 METEOROLOGICAL INFORMATION

The weather was fine and therefore had no bearing on this incident.

#### 1.7 AIDS TO NAVIGATION/COMMUNICATIONS

Communications relevant to the incident were recorded on continuously running magnetic tape and a transcript is at Appendix B. Communications; obstacle (vehicle/aircraft) lights; visual signals; standard day and night dispersal markings including those for the temporary wall of sand-bags were normal in all respects.

#### 1.8 AERODROME INFORMATION

The KUL International Airport aircraft parking availability under normal circumstances, without any work in progress, is already known and recognised as being very compact and crowded for the amount of air traffic that utilizes it. The congestion is made far worse due to development works in progress at the time of the incident. The lay-out and space available is so tight that it is also not possible to define ground vehicle or works service plant/machinery lanes with the required clearances from parked or moving aircraft.

At the time of the incident, KUL International Airport has been undergoing extensive work on the expansion of the parking aprons fronting the main terminal building. Works involve movements of plant and heavy machinery close to parking areas. Precautionary measures are arranged where necessary and temporary sand-bag walls have been constructed to give necessary protection to both incoming/outgoing traffic and heavy plant

vehicles and workers. Owing to the development programme and construction work, existing nose-wheel guidelines to parking bays 7, 8, 9, 10 and 11 are not reliable and pilots are advised to observe marshallers' directions when taxiing into these bays. The apron lighting at and around the place of incident was also considered below ideal. Details of the construction work including phased timings were published in a Class One - Notice to Airmen (NOTAM) on 25 Feb 80, effective 01 Apr 80. The availability of parking stands for aircraft arrivals/departures would be restrictive and amended periodically during various stages of construction, from 01 Apr 80 through 01 Sept 81 and thereafter until completion of the whole development programme (Appendix C).

Sand-bag walls were constructed along the northern boundary of the terminal dispersal, and also in the shape of a finger jutting out from the centre of the terminal building. The sand-bag finger separated the overall parking area available into the normal 2 distinct Southern and Northern Parking Aprons. The sand-bag walls were generally  $2\frac{1}{2}$  metres in height. This height was reduced to approximately  $1\frac{1}{2}$  metres towards the tip of the finger.

## 2. ANALYSIS

### 2.1 AIR TRAFFIC CONTROL ASPECTS

Evidence indicate that all ATC procedures were satisfactorily carried out by both the crew and ATC personnel. Start-up and taxi was normal. The ground marshaller also carried out his functions in accordance with established procedures, to a satisfactory degree as expected on him. He could not possibly see around the corner from his normal marshalling position.

The driver of the tractor pulling the train of baggage containers passed PH - BUN on the aircraft's port side as the aircraft began to taxi out. On passing the aircraft, the driver pulled up in an obscure position by the corner and at the tip of the sand-bag finger. He had stopped in order to await the final parking of a Cathay Pacific Tristar in Bay 8. The driver should not have approached or passed PH-BUN which had already started up and begun to taxi out. When he did so, he should have taken

adequate precautions to remain clear of any traffic that he overtook in accordance with existing regulations. He failed to do so in either case.

The crew of PH - BUN failed to see the tractor with its train of 4 baggage containers as they began negotiating the corner of the wall of sand-bags. Evidence confirms that the dimensions of the taxi-way at the tip of the sand-bag wall was just sufficient for a B747 sized aircraft to taxi unobstructed to the holding point of RW 33. Any aircraft, vehicle or any other machinery positioned at that section of the taxi-way would therefore cause an obstruction.

The crew were most likely encountering sufficient flight deck workload and could have been distracted from giving the necessary emphasis to the congested outside environment. Too much reliance could also have been placed on the marshaller for clearance from obstacles.

### 3. CONCLUSIONS

- a. The parking aprons at KUL International Airport is presently undergoing extensive work in progress to expand the parking facilities at the airport. This development programme was correctly notamed in accordance with established requirements and was effective at the time of the incident.
- b. The aircraft was parked at Bay 9 and its start up and taxi were carried out satisfactorily in accordance with procedures.
- c. As the aircraft obtained taxi clearance and began to roll, a tow-tractor pulling a train of 4 baggage containers overtook the aircraft on its port side.
- d. The tractor train stopped unknown to ATC, the marshaller and the crew by the corner tip of the sandbag wall. Stopping in this position obscured him from being clearly seen and was contrary to existing regulations.
- e. Both the marshaller and crew taxied out the aircraft correctly in their respective roles. Neither ATC, the marshaller nor the crew saw the tow-tractor and baggage trolleys as the aircraft negotiated the shoulder corners and finger-tip of the sand-bag wall.

- f. The aircraft PH - BUN collided with the last 2 out of a train of 4 baggage containers as it completed negotiating the corner and began to taxi on the centre-line of the main taxiway for RW 33.


4. CAUSE

The incident was caused by the aircraft being taxied into 2 metal baggage containers out of a train of 4 being towed by a tractor. A significant contributory factor to the incident was the driver of the tow-tractor stopping his vehicle and train of baggage containers where he was causing an obstruction. Insufficient monitoring of the ground environment under less than ideal lighting condition was also considered as a contributory factor.

5. RECOMMENDATIONS

It is recommended that:

- (a) Existing published procedures/regulations governing the movement/positioning and routing of all vehicles in or around the vicinity of the airport parking apron be reviewed with a view to tightening control of such movements to those considered absolutely necessary. Additionally, these regulations/procedures should be publicised/re-emphasised periodically to all driving personnel so long as extensive works in progress continue at the airport.
- (b) So long as extensive development work continues at the parking aprons, push-back/tow procedures should be used wherever possible. The aircraft should only taxi under its own power from the centre-line of the main taxiway.
- (c) The Department of Civil Aviation studies with a view of implementing the requirement for an Apron Services Control Unit to provide better co-ordination of all ground movements in the parking aprons. Such a Unit would provide closer liaison between supervisory staff of MAS Apron Services and ATC.

  
 (OMAR SAMAN),  
 Chief Inspector of Accidents/Safety,  
 Department of Civil Aviation.

October, 1980.

DEPARTMENT OF CIVIL AVIATION

INCIDENT INVESTIGATION REPORT 80 - 2

ROYAL DUTCH AIRLINES (KLM) BOING 747 AIRCRAFT  
PH - BUN AT KUALA LUMPUR INTERNATIONAL AIRPORT  
ON 01 AUG 80.

Chief Inspector of Accidents/Safety,  
Department of Civil Aviation,  
19/20 Floor, Wisma MPI,  
Jalan Raja Chulan,  
KUALA LUMPUR 05-10



## THE INCIDENT

The aircraft, a Boeing 747, registration PH - BUN of Royal Dutch Airlines (KLM), was parked at Bay 9 of the KL International Airport on the evening of 01 Aug 80. It had landed earlier and was in transit for return onward flights to Amsterdam. The aircraft was, therefore, operating a regular public transport flight, and there were 215 passengers and 14 crew on board.

At 2056 hrs LT, the aircraft requested and was given start-up clearance. Thereafter, clearance to taxi to the holding point for Runway (Rwy) 33 was given with an advisory notice that a Cathay Pacific (CX) Tristar was taxiing into Bay 8. This clearance was acknowledged. The aircraft taxied out of Bay 9, and then turned left for the holding point of Rwy 33. As it did so, the No. 1 engine of the aircraft hit 2 of 4 metal baggage containers on trailers being towed in train by a tractor. The collision occurred at 2104 LT. The aircraft captain was informed; the aircraft shutdown and towed back to its original parking bay.

### 1. FACTUAL INFORMATION

1.1 Boeing 747 aircraft, registration PH - BUN was operated by Royal Dutch Airlines (KLM) on a regular, public transport service. On the evening of 01 Aug 80, it was parked in transit at Bay 9 of the KUL International Airport, Subang. It carried 215 passengers and 14 crew.

The aircraft requested ATC clearance for start-up, destination Bangkok, at 2056 LT. It was advised to stand-by for start-up whilst some ATC details required for en-route clearance to Bangkok was confirmed.

The aircraft was finally given start-up clearance at 2057 LT. At 2102 LT, the aircraft requested taxi clearance, and was again requested to stand-by. At 2103 LT, the aircraft was finally given taxi clearance for the holding point of RW 33. The taxi clearance included advice that a Cathay Pacific Tristar was taxiing into an adjoining Bay 8.

Sometime between 2103 and 2104 LT, the aircraft captain observed a train of 4 baggage containers being towed by a tractor pass him on the port side of the aircraft heading towards and around the corner of Bay 9. (This corner is created by a finger of temporary wall of sand-bags jutting out from the centre of the terminal building/aircraft parking area. Appendix A shows a sketch of the incident area).

After taxi clearance was received at 2103 LT, the aircraft taxied out under the guidance of a ground marshaller, who was positioned adjacent to and close to the tip of the finger of sand bags. The aircraft continued to taxi out of Bay 9 and then commenced a left turn round the temporary wall of sand-bags for the holding point of RW 33. During this cornering manoeuvre, the ground marshaller continued to signal the "All Clear-Marshalling Finished" signal.

Shortly afterwards at 2104 LT the No. 1 engine of the aircraft hit the last 2 out of 4 train of metal baggage containers. The baggage train, unknown to ATC, the marshaller and the aircraft crew, had stopped beside and at the very tip of the finger of sand-bags. The captain was informed of the collision and the aircraft was subsequently shut down and towed back to Bay 9.

1.2 INJURIES TO PERSONS

Nil.

1.3 AIRCRAFT AND OTHER DAMAGE

The aircraft sustained a 2 foot tear and some minor scratches and dents at the bottom surface of the cowling of No. 1 Engine. Two empty Cathay Pacific metal containers were similarly ripped apart by the force of the impact.

#### 1.4 PERSONNEL INFORMATION

Following the incident, the captain of PH - BUN was requested to file an ATC Incident Report. Thereafter, whilst repairs to the aircraft were effected, the crew were required on rest in order to resume flight as soon as repairs were completed. The captain of PH - BUN had been to KUL International Airport on previous occasions.

#### 1.5 AIRCRAFT INFORMATION

Not relevant to this investigation

#### 1.6 METEOROLOGICAL INFORMATION

The weather was fine and therefore had no bearing on this incident.

#### 1.7 AIDS TO NAVIGATION/COMMUNICATIONS

Communications relevant to the incident were recorded on continuously running magnetic tape and a transcript is at Appendix B. Communications; obstacle (vehicle/aircraft) lights; visual signals; standard day and night dispersal markings including those for the temporary wall of sand-bags were normal in all respects.

#### 1.8 AERODROME INFORMATION

The KUL International Airport aircraft parking availability under normal circumstances, without any work in progress, is already known and recognised as being very compact and crowded for the amount of air traffic that utilizes it. The congestion is made far worse due to development works in progress at the time of the incident. The lay-out and space available is so tight that it is also not possible to define ground vehicle or works service plant/machinery lanes with the required clearances from parked or moving aircraft.

At the time of the incident, KUL International Airport has been undergoing extensive work on the expansion of the parking aprons fronting the main terminal building. Works involve movements of plant and heavy machinery close to parking areas. Precautionary measures are arranged where necessary and temporary sand-bag walls have been constructed to give necessary protection to both incoming/outgoing traffic and heavy plant

vehicles and workers. Owing to the development programme and construction work, existing nose-wheel guidelines to parking bays 7, 8, 9, 10 and 11 are not reliable and pilots are advised to observe marshallers' directions when taxiing into these bays. The apron lighting at and around the place of incident was also considered below ideal. Details of the construction work including phased timings were published in a Class One - Notice to Airmen (NOTAM) on 25 Feb 80, effective 01 Apr 80. The availability of parking stands for aircraft arrivals/departures would be restrictive and amended periodically during various stages of construction, from 01 Apr 80 through 01 Sept 81 and thereafter until completion of the whole development programme (Appendix C).

Sand-bag walls were constructed along the northern boundary of the terminal dispersal, and also in the shape of a finger jutting out from the centre of the terminal building. The sand-bag finger separated the overall parking area available into the normal 2 distinct Southern and Northern Parking Aprons. The sand-bag walls were generally 2½ metres in height. This height was reduced to approximately 1½ metres towards the tip of the finger.

## 2. ANALYSIS

### 2.1 AIR TRAFFIC CONTROL ASPECTS

Evidence indicate that all ATC procedures were satisfactorily carried out by both the crew and ATC personnel. Start-up and taxi was normal. The ground marshaller also carried out his functions in accordance with established procedures, to a satisfactory degree as expected on him. He could not possibly see around the corner from his normal marshalling position.

The driver of the tractor pulling the train of baggage containers passed PH - BUN on the aircraft's port side as the aircraft began to taxi out. On passing the aircraft, the driver pulled up in an obscure position by the corner and at the tip of the sand-bag finger. He had stopped in order to await the final parking of a Cathay Pacific Tristar in Bay 8. The driver should not have approached or passed PH-BUN which had already started up and begun to taxi out. When he did so, he should have taken

adequate precautions to remain clear of any traffic that he overtook in accordance with existing regulations. He failed to do so in either case.

The crew of PH - BUN failed to see the tractor with its train of 4 baggage containers as they began negotiating the corner of the wall of sand-bags. Evidence confirms that the dimensions of the taxi-way at the tip of the sand-bag wall was just sufficient for a B747 sized aircraft to taxi unobstructed to the holding point of RW 33. Any aircraft, vehicle or any other machinery positioned at that section of the taxi-way would therefore cause an obstruction.

The crew were most likely encountering sufficient flight deck workload and could have been distracted from giving the necessary emphasis to the congested outside environment. Too much reliance could also have been placed on the marshaller for clearance from obstacles.

### 3. CONCLUSIONS

- a. The parking aprons at KUL International Airport is presently undergoing extensive work in progress to expand the parking facilities at the airport. This development programme was correctly notamed in accordance with established requirements and was effective at the time of the incident.
- b. The aircraft was parked at Bay 9 and its start up and taxi were carried out satisfactorily in accordance with procedures.
- c. As the aircraft obtained taxi clearance and began to roll, a tow-tractor pulling a train of 4 baggage containers overtook the aircraft on its port side.
- d. The tractor train stopped unknown to ATC, the marshaller and the crew by the corner tip of the sandbag wall. Stopping in this position obscured him from being clearly seen and was contrary to existing regulations.
- e. Both the marshaller and crew taxied out the aircraft correctly in their respective roles. Neither ATC, the marshaller nor the crew saw the tow-tractor and baggage trolleys as the aircraft negotiated the shoulder corners and finger-tip of the sand-bag wall.

f. The aircraft PH - BUN collided with the last 2 out of a train of 4 baggage containers as it completed negotiating the corner and began to taxi on the centre-line of the main taxiway for RW 33.


4. CAUSE

The incident was caused by the aircraft being taxied into 2 metal baggage containers out of a train of 4 being towed by a tractor. A significant contributory factor to the incident was the driver of the tow-tractor stopping his vehicle and train of baggage containers where he was causing an obstruction. Insufficient monitoring of the ground environment under less than ideal lighting condition was also considered as a contributory factor.

5. RECOMMENDATIONS

It is recommended that:

- (a) Existing published procedures/regulations governing the movement/positioning and routing of all vehicles in or around the vicinity of the airport parking apron be reviewed with a view to tightening control of such movements to those considered absolutely necessary. Additionally, these regulations/procedures should be publicised/re-emphasised periodically to all driving personnel so long as extensive works in progress continue at the airport.
- (b) So long as extensive development work continues at the parking aprons, push-back/tow procedures should be used wherever possible. The aircraft should only taxi under its own power from the centre-line of the main taxiway.
- (c) The Department of Civil Aviation studies with a view of implementing the requirement for an Apron Services Control Unit to provide better co-ordination of all ground movements in the parking aprons. Such a Unit would provide closer liaison between supervisory staff of MAS Apron Services and ATC.

  
 (OMAR SAMAN),  
 Chief Inspector of Accidents/Safety,  
 Department of Civil Aviation.

October, 1980.