



**Statens haverikommission**  
Swedish Accident Investigation Board

ISSN 1400-5719

## **Report RL 2003:32e**

***Incident involving aircraft HB-JAY  
and SE-ISR at Stockholm/Arlanda  
airport, AB County, Sweden, on the  
16<sup>th</sup> of December 2002***

Dnr L-102/02

SHK investigates accidents and incidents with regard to safety. The sole objective of the investigations is the prevention of similar occurrences in the future. It is not the purpose of this activity to apportion blame or liability.

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Translated by Dennis Lynn Anderson , from the original Swedish at the request of the Swedish Accident Investigation Board.

In case of discrepancies between the English and the Swedish texts, the Swedish text is to be considered the authoritative version.

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**Report RL 2003:32e**

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The Swedish Accident Investigation Board (Statens haverikommission, SHK) has investigated an incident that occurred on the 16<sup>th</sup> of December 2002, at Stockholm/Arlanda airport, AB County, involving two aircraft with registration HB-JAY and SE-ISR respectively.

In accordance with section 14 of The Ordinance on the Investigation of Accidents (1990:717) the Board herewith submits a final report on the investigation.

Carin Hellner

Monica J. Wismar

Henrik Elinder

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L-102/02

Report finalized 2003-08-29

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<i>Aircraft:registration, type</i>	A. HB-JAY, Embraer EMB-145LU B. SE-ISR, SAAB 340
<i>Class, airworthiness</i>	Normal, valid certificate of airworthiness
<i>Owner/Operator</i>	A. Swiss/Swiss B. ABB New Finance AB/Skyways AB
<i>Date and time</i>	The 16 <sup>th</sup> of December 2002 at 07:07 hrs during darkness. <i>Note:</i> All times in the report refer to Swedish Standard Time (UTC + 1 hour)
<i>Place</i>	Stockholm/Arlanda airport, AB County (pos 5938N 01755E; 38 meters above sea level)
<i>Type of flight</i>	A. Scheduled traffic B. Scheduled traffic
<i>Weather</i>	According to SMHI's analysis: wind 070 <sup>o</sup> /6 knots, visibility 10 km, cloud cover 1-2/8 stratocumulus with bases at 2,500 feet, temp./dew point -4/-6 °C, QNH 1030 hPa.
<i>Persons on board:</i>	
<i>crew members</i>	A. Pilots 2      Cabin crewmembers 2 B. Pilots 2      Cabin crewmembers 1
<i>passengers</i>	A. 26 B. 29
<i>Injuries to persons</i>	None
<i>Damage to aircraft</i>	None
<i>Other damage</i>	None
<u><i>Aircraft A.</i></u>	
<i>Pilot in command:</i>	
<i>Sex, age, licence</i>	Male, 28 years, ATPL <sup>1</sup> (A)-certificate
<i>Total flying time</i>	3,007 hours, of which 517 hours on the type
<i>Flying hours previous 90 days</i>	208 hours, of which 144 on the type
<i>Number of landings previous 90 days</i>	60, of which 46 on the type
<i>First officer:</i>	
<i>Sex, age, licence</i>	Male, 26 years, CPL <sup>2</sup> (A)-certificate
<i>Total flying time</i>	2,240 hours, of which 810 hours on the type
<i>Flying hours previous 90 days</i>	160 hours, all on the type
<i>Number of landings previous 90 days</i>	105

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<sup>1</sup> ATPL (A) - Airline Transport Pilot Licence Aeroplane

<sup>2</sup> CPL (A) - Commercial Pilot License Aeroplane

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### Aircraft B.

#### *Pilot in command:*

<i>Sex, age, licence</i>	Male, 35 years, ATPL (A)-certificate
<i>Total flying time</i>	3,600 hours, of which 2,350 hours on the type
<i>Flying hours previous 90 days</i>	100 hours, all on the type
<i>Number of landings previous 90 days</i>	115

#### *First officer:*

<i>Sex, age, licence</i>	Male, 33 years, CPL (A)-certificate
<i>Total flying time</i>	2,750 hours, of which 1,300 hours on the type
<i>Flying hours previous 90 days</i>	120 hours, all on the type
<i>Number of landings previous 90 days</i>	115

#### *Air traffic controller:*

<i>Sex, age, licencee</i>	Male, 53 years, FL-(ATC-) certificate since 1979
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The Swedish Accident Investigation Board (Statens haverikommission (SHK) was notified on the 23<sup>rd</sup> of December 2002 that an incident had taken place at 07:07 hours on the 16<sup>th</sup> of December 2002 at Stockholm/Arlanda airport, AB County, Sweden; involving two aircraft with registration HB-JAY and SE-ISR respectively.

The incident has been investigated by SHK represented by Carin Hellner, Chairman, Monica J. Wismar, Chief Investigator Flight Operations and Henrik Elinder, Chief Technical Investigator Aviation.

The investigation has been followed by The Swedish Civil Aviation Administration represented by Max Danielsson.

### **History of the flight**

The aircraft HB-JAY, with flight number LX 1223, was parked at gate 69L of Terminal #2 at Stockholm/Arlanda airport and was being prepared for a flight to Basel. Upon radio contact with air traffic control on the GND (Ground West) frequency, the pilots received clearance to taxi to the holding position of runway 08 with the clearance "*Swiss 1223 taxi to holding position runway 08*".

During this time the aircraft SE-ISR, with flight number SKX 300, landed on runway 01L. After landing the aircraft left the runway via exit YD. When the pilots contacted GND for taxi directions they received the instructions "*Express 300, morning, taxi to Sierra 75 hold before Alfa*". This clearance was acknowledged. They continued taxiing via taxiway ZH and Z southbound towards the S 75 parking stand. While taxiing the pilot in command requested that the first officer shutdown the left-hand engine. As the aircraft approached terminal 3, initially the pilot in command did not observe LX 1223, due to an aircraft, which was parked on stand 59. However he did see an aircraft that taxied out from the ramp situated behind the terminal. He also observed that a so-called marshaling vehicle had been pre-positioned and was waiting for them beyond taxiway A, according to the normal routine (See depiction below).

LX 1223 taxied out on taxiway A behind another out-taxiing aircraft from the ramp. When LX 1223 approached the intersecting taxiway Z, the first officer aboard the aircraft detected SKX 300 approaching from the

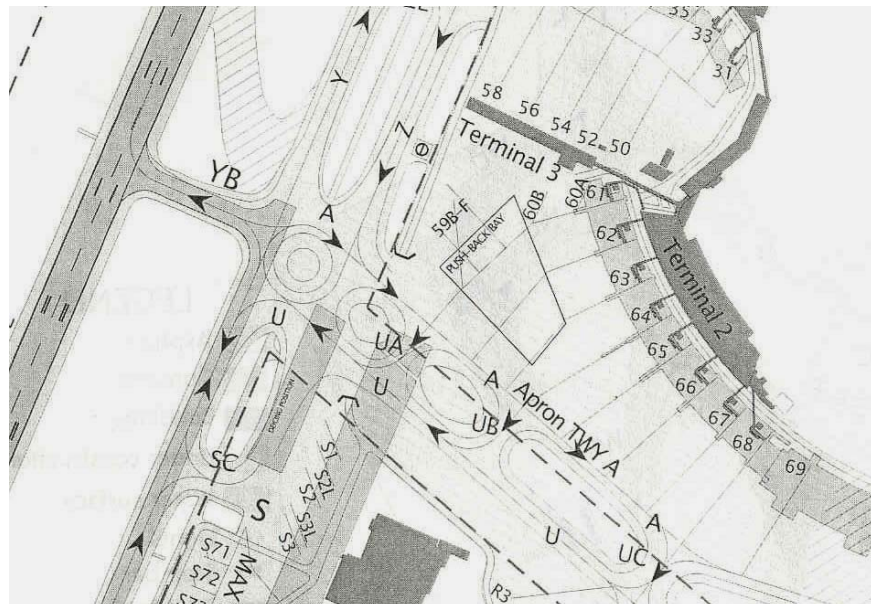
right without stopping. He shouted "stop" and the pilot in command had to perform a heavy braking in order to avoid a collision. The aircraft commander estimated the minimum distance between the aircraft was approximately 3 meters.

The first officer reported the occurrence to the air traffic controller who reiterated to the pilots in SKX 300 that they were only cleared to taxiway A. The pilot in command in SKX 300 was aware that they were only cleared to taxiway A. Consequently, the crossing of taxiway A took place involuntarily and unconsciously. The first officer in SKX 300 was occupied with the shut-down of the left-hand engine and first became aware of the situation when the pilot in command applied the brakes after passing the taxiway.

The runway and taxiway system at Stockholm/Arlanda airport is complicated, with a large number of differing types of "intersections" where mistakes can be made. Even among pilots who frequently use the airport, there is the opinion that the taxiway system design and markings and the traffic flow make it "difficult" to operate there.

Traffic on the ground is controlled from two air traffic controller positions, GND/WEST and GND/NORTH, with responsibility for the western and northern portions of the airport respectively. This means that crews are often required to change ground control frequency in order to receive further clearances during taxi operations. It rather often happens, in connection with taxiing between the different portions of the airport, that pilots forget to hold at appointed positions. From the tape recording of the incident in question it is evident that such a mistake was made by another crew at intersection ZK less than one minute after the incident under investigation here. The number of such occurrences that remain unreported is unknown.

Out-taxiing from Terminal 2 shall, according to the AIP<sup>3</sup>, take place via taxiway U (see below). In order to shorten the taxi distance for departures from the northern portion of the airport, it is customary that crews request to taxi out via taxiway A, which is often accepted by the air traffic control. The aircraft taxiing out ahead of LX 1223 was cleared to taxi out via taxiway A without having requested this.



## Conclusions

The pilot in command on SKX 300 was fully aware of the fact that they were only cleared up to taxiway A. All factual information indicate that it was simply a mistake on his part that they crossed the taxiway without clearance

<sup>3</sup> AIP-Aeronautical Information Publication

and therewith caused the near-collision incident. Contributory to this might have been that the pilot in command, when he observed the out-taxiing aircraft ahead of LX 1223 pass in front of him, mentally felt that the taxiway leading to the awaiting marshalling vehicle was therefore clear. Furthermore, the aircraft, which was parked at Terminal 3, blocked the view so that he first observed LX 1223 at a very late stage. Also contributory can have been that with the clearance "*Express 300, morning, taxi to Sierra 75 hold before Alfa*", they in fact received a sort of "double clearance", something which should be avoided.

The event shows the importance of both the pilots monitoring the area around the aircraft's taxi route as well as controlling that given clearances are followed during taxiing.

As mentioned previously, the taxi system at Stockholm/Arlanda airport is considered to be "difficult" and the risk that pilots might make mistakes is relatively large. Considering the serious consequences that such mistakes may result in, there is reason for the Civil Aviation Administration to perform an unbiased review of the airport's taxi system with regard to measures which can be taken in order to diminish the risk of operational mistakes.

Additionally from the investigation, SHK has established the fact that out-taxiing aircraft from Terminal 2 are often allowed to taxi out via taxiway A, despite that the AIP prescribes out-taxiing via taxiway U. SHK understands that air traffic control has the ambition to satisfy the desires of the operators with respect to the shortest possible taxi route. However, SHK also sees a risk that frequent deviations from established taxi routes might result in these routes becoming the "normal route" for the operators. At the time of the occurrence under investigation, the aircraft preceding LX 1223 was cleared out via taxiway A without having requested this. LX 1223 did not request any special taxi route; they simply followed behind the preceding aircraft via taxiway A, to which the air traffic controller did not react.

During periods of high traffic volume and adverse weather conditions, this can create misunderstandings and collision risks. Therefore SHK is of the opinion that prescribed taxi routes shall always be those that normally apply. Clearance for an aircraft to taxi a different route shall only be issued after a special request from pilots and when the situation so allows.

The incident was caused by the pilot in command mistakenly crossing a taxiway without permission from the air traffic controller. Contributory to this has been that:

- the airport taxiway system is complex,
- there is a risk that operational mistakes can be made,
- both pilots did not have full watch outwards, and
- air traffic controllers give aircraft clearance to taxi in deviation from AIP.

### **Recommendations**

Concerning Stockholm/Arlanda airport, the Swedish Civil Aviation Administration is recommended to

- perform an unbiased review of the airport's taxi system with regard to measures which can be taken in order to diminish the risk of operational mistakes (*RL 2003:32e R1*), and
- in connection with ground control, normally always clear aircraft to taxi in accordance with the AIP, unless a different taxi route is requested by pilots and the situation allows this (*RL 2003:32e R2*).