

**Ref. No 040/06/ZZ**

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# **FINAL REPORT**

**Investigation into the incident  
of aircraft A 320 - 200,  
at LKPR on 12 February 2006**

Prague  
April 2007

The present document is the translation of the Czech Investigation Report. Although efforts are made to translate it as accurate as possible, discrepancies may occur. In this case the Czech version is authentic.

## **A) Introduction**

Operator: Air France (France)  
Aircraft type: Airbus Industries, A 320-200  
Registration: F-GKXJ  
Place of Incident: Prague / Ruzyně Airport (LKPR)  
Date and Time: 12 February 2006, at 15:08 (All times in this report are UTC)

## **B) Synopsis**

On 12 February 2006 Czech Republic Investigation Institute (AII) was notified by the Czech Republic Air Traffic Control about the incident of an Air France A 320-200 aircraft. The aircraft commander who was on flight AF 1983 from Prague-Ruzyně Airport (LKPR) to Paris Roissy – Charles de Gaulle Airport (LFPG) reported a failure on the right-hand engine after taking off from RWY 24 and asked for local alert and return to LKPR. The No.2 engine failure was confirmed on the ground and the AF 1983 flight was cancelled.

The cause of the incident was investigated by an AII commission comprising:

Investigator in charge: Ing Stanislav Suchý  
Members: Ing. Lubomír Střihavka

The Final report was released by:

AIR ACCIDENTS INVESTIGATION INSTITUTE  
Beranových 130  
199 01 PRAHA 99

On the April 2007.

## **C) The Final report includes the following main parts:**

- 1) Factual information
- 2) Analysis
- 3) Conclusions
- 4) Safety recommendation
- 5) Annexes (to copy No.1 stored in AII archive)

## **1 Factual information**

### **1.1 History of the incident**

On 12 February 2006 the crew of Air France A 320-200, flight AFR 1983 from Prague-Ruzyně Airport (LKPR) to Paris Roissy – Charles de Gaulle Airport (LFPG), detected after taking off from RWY 24 at a height of 1500 ft a speed difference between the left engine (No.1 /  $N_1 = 80\%$ ) and the right engine (No. 2 /  $N_1 = 66\%$ ). The engine No. 2 speed drop after the take-off took place without ECAM warning (Electronic Centralised Aircraft Monitoring). No. 2 engine power would not recover even with the engine control stick in TOGA position – the speed reached only a value of  $N_1 = 71\%$ .

At 15:08 the aircraft commander after making two unsuccessful attempts to increase No. 2 engine power decided not to follow climbing instructions from the traffic controller. He sent off an urgent signal and message about the engine problem. Then he asked for return and landing back on LKPR along with local alert of the airport rescue and fire emergency services.

### **1.2 Injuries to persons**

NIL

### **1.3 Damage to aircraft**

NIL

### **1.4 Other damage**

NIL

### **1.5 Personnel information**

The PIC, aged 49, holder of ATPL(A), had a PIC qualification for the type A 318 - 321. He has flown total 8900 hours.

The F/O, aged 26, holder of CPL(A). He has flown total 1600 hours.

### **1.6 Aircraft information**

#### **1.6.1 Aircraft**

Type and Model:	A 320-200
Registration:	F-GKXJ
Manufacturer:	Airbus Industries
Serial number:	1900
Total flight time:	8374 hours
Certificate of Airworthiness:	valid

#### **1.6.2 Engine No. 2**

Type and Model:	CFM 56-B4/P
Rinstakled new on A/C	F-GKXJ
Serial number:	575503
Total flight time:	8374 hours
Total cycles:	3433

The aircraft operator's technical staff made a check on No. 2 engine on the ground to find out that a hose to the PS3 sensor had been damaged due to contact with the starter air supply tube.

Since the time the No. 2 engine had been mounted on the plane - in the place where there was the damaged hose - three assembly jobs were done to find the failure and change the engine control unit (ECU). The starter was dismantled once as well.

### **1.7 Meteorological information**

According the METAR/SPECI report on 12 February 2006 on Praha/Ruzyně Airport was the following weather at 15:00 – 15:30 hours:

Cloud: SCT 2500 - 3000 ft, BKN, OVR 4000 ft AGL  
Wind at surface: 300° - 320°/ 6 - 8 kt  
Temperature: - 1°~ -6°C

### **1.5 Aids to navigation**

Aids to navigation were no aspect relevant to the incident.

### **1.6 Communications**

Communications between the AFR 1983 crew and air traffic service units were maintained on frequency ATS Ruzyně Delivery 120,05 MHz, Ruzyně Ground 121,9 MHz and Ruzyně Tower 118,1 MHz.

### **1.10 Aerodrome information**

RWY 24 was in use at LKPR. It was no aspect relevant to the incident.

### **1.11 Flight recorders**

Pertinent data from the F-GKXJ flight recorder were no available to AAI investigation. The ATS records were used for an analysis.

### **1.12 Description of incident site**

NIL

### **1.13 Medical and pathological information**

NIL

### **1.14 Fire**

NIL

### **1.15 Survival aspects**

NIL

### **1.16 Tests and research**

NIL

### **1.17 Organizational and management information**

NIL

### **1.18 Additional information**

NIL

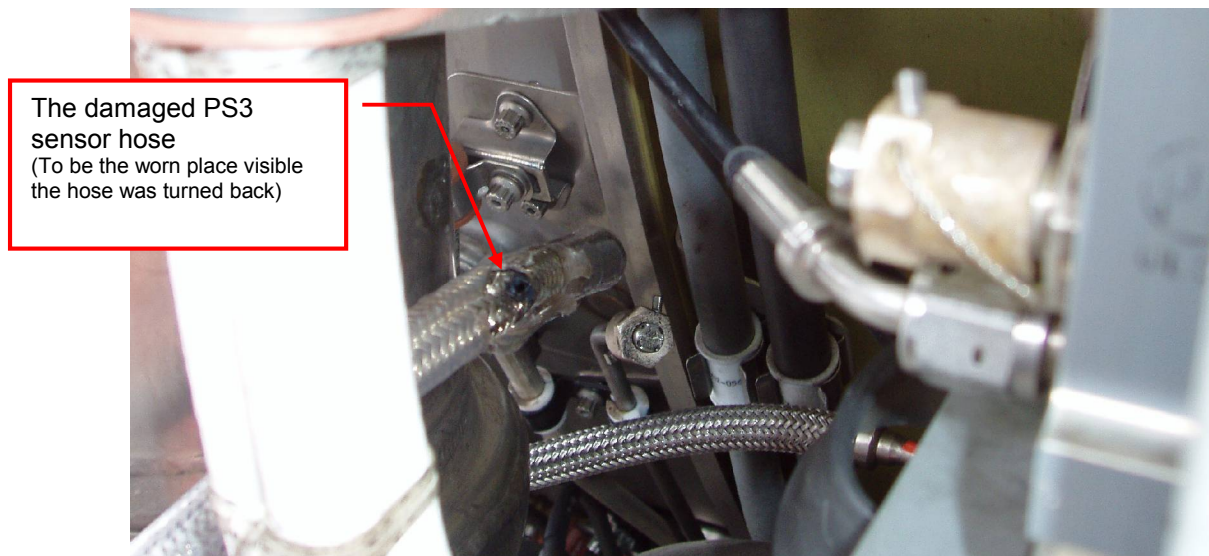
### **1.19 Useful or effective investigation techniques**

The serious incident has been investigated in accordance with Annex 13.

## 2 Analysis

2.1 The first symptom of No. 2 engine's power drop was its sudden speed fall from  $N_1$  80% to 66% , without ACARS warning (Aircraft communication addressing and reporting system) through ECAM (Electronic centralized aircraft monitoring). After the aircraft commander found out the engine speed had dropped, he made two attempts to increase the power by setting the control to the take-off / go around position (TOGA). But the right engine speed only increased to  $N_1= 71\%$ . In this situation the aircraft commander took the decision to make a safety landing, which he finished without problem.

2.2 The PS3 sensor hose was tapped through at the place where it ran in the very vicinity of the starter lower air supply duct. The damage nature showed that the hose had worn through in operation due to insufficient clearance between the hose and the tube, which made the hose leak. The last repair in this place was carried out on 21 January 2006.



The PS3 sensor hose had been replaced and the subsequent engine test run showed the engine was working free and clear.

## 3 Conclusions

### 3.1 The commission determined the following conclusions:

- The air crew had good qualification and rating for the flight;
- The aircraft had valid airworthy certificate, maintenance and operation release certificate;
- The No. 2 engine's sudden power drop in climb following the take-off, without ECAM warning, was caused by  $N_1$  speed falling down to 66% ;
- After setting the engine control stick to TOGA position, the No. 2 engine speed would not go up above  $N_1 = 71\%$ ;
- The aircraft commander with regard to the failure character acted correctly to ask for a safety landing;

- No. 2 engine's speed drop was due to the PS3 sensor faulty hose that was tapped through;
- The PS3 sensor hose was in a position allowing its interference with the starter lower air supply duct.

### **3.2 The causes**

The likely cause of the failure was that clearance between the PS3 sensor hose and the starter lower air supply duct had not been adjusted properly when assembling the hose. That made the hose come in contact with the air tube during engine operation, leading to damage of the hose that was difficult to detect visually.

## **4 Safety recommendations**

Based on what the aircraft operator learned from the hose damage, a number of aircraft with CFM56 engines were checked for enough space between the PS3 sensor hose and the starter lower air supply duct to make sure the hose will not come in contact with the air tube.

The Civil Aviation Authority should verify if there are proper checks in the maintenance procedure of aircraft with CFM56-B4 engines in operation to make sure the PS3 hose and the starter lower air supply duct will not get in contact.

Prague, 4 April 2007