KÖZLEKEDÉSBIZTONSÁGI SZERVEZET

TRANSPORTATION SAFETY BUREAU

FINAL REPORT

2009-229-4P
AVIATION INCIDENT

Budaörs
23 August 2009

Piper Cherokee Arrow PA 28R 201

SE-GVA

The sole objective of the technical investigation is to reveal the causes and circumstances of aviation accidents, incidents or irregularities and to initiate the necessary technical measures and make recommendations in order to prevent similar cases in the future. It is not the purpose of this activity to apportion blame or liability.

This present investigation was carried out on the basis of

- Act XCVII of 1995 on aviation,
- Annex 13 to ICAO Convention on Civil Aviation, put in force in Hungary by MTCW (Ministry of Transport, Communications and Water) Decree 20/1997. (X. 21.) on the declaration of the annexes of the Convention on International Civil Aviation signed in Chicago on 7th December 1944,
- Act CLXXXIV of 2005 on the technical investigation of aviation, railway and marine **accidents** and incidents (hereinafter referred to as Kbvt.),
- MET Decree 123/2005 (XII. 29.) on the regulations of the technical investigation of aviation accidents, incidents and irregularities;
- In absence of other related regulation of the Kbvt., the Transportation Safety Bureau of Hungary carried out the investigation in accordance with Act CXL of 2004 on the general rules of administrative authority procedure and service,
- The Kbvt. and the MET Decree 123/2005 (XII. 29.) jointly serve the compliance with the following EU acts:
    a) Council Directive 94/56/EC of 21 November 1994 establishing the fundamental principles governing the investigation of civil aviation accidents and incidents, with the exception of its Annex;
    b) Directive 2003/42/EC of the European Parliament and of the Council of 13 June 2003 on occurrence reporting in civil aviation, with the exception of its Annex I and Annex II.
- The competence of the Transportation Safety Bureau of Hungary is based on Government Decree 278/2006 (XII. 23.) from 1st January 2007.

Under the aforementioned regulations

- The Transportation Safety Bureau of Hungary shall investigate aviation accidents and serious aviation incidents.
- The Transportation Safety Bureau of Hungary may investigate aviation incidents and irregularities which - in its judgement - would have resulted in accidents in other circumstances.
- The technical investigation is independent of any administrative, infringement or criminal procedures.
- In addition to the aforementioned laws, the ICAO DOC 6920 and 9756 Manual of Aircraft Accident Investigation is applicable.
- This present Final Report shall not be binding, nor shall an appeal be lodged against it.

Persons participating in the technical investigation did not act as experts in other procedures concerning the same case and shall not do so in the future.

The IC shall safe keep the data having come to their knowledge in the course of the technical investigation. Furthermore, the IC shall not be obliged to make the data – regarding which the owner of the data could have refused its disclosure pursuant to the relevant act – available for other authorities.

This present Final Report was completed based on the Draft Report compiled by the IC and approved by the Director-General of TSB and sent to the concerned parties and organisations – defined by law - for reflections.

At the same time, the Director-General of TSB invited the concerned persons and organisations to participate in the closing discussion of the Final Report.

The IC did not receive any comments from the concerned parties, and none of them was present on the final discussion held on 16 March 2010. Therefore the text of the Final Report remains unchanged compared to the draft report.

The Final Report will be sent to recipients defined by law and also posted on the TSB website.

DEFINITIONS AND ABBREVIATIONS

EDDB	ICAO code for Berlin Schönefeld Airport
FAA	Federal Aviation Administration
GKM	Ministry of Economy and Transport (Gazdasági és Közlekedési Minisztérium, GKM)
HC	HungaroControl, the aeronautical service provider of Hungary
IC	Investigating Committee
ICAO	International Civil Aviation Organization
Kbvt.	Act CLXXXIV of 2005 on the technical investigation of aviation, railway and marine accidents and incidents
LHBS	ICAO code for Budaörs Airport
NTA AD	National Transport Authority, Aviation Directorate
PPL/A	Private Pilot Licence/A
TSB	Transportation Safety Bureau

BRIEF DESCRIPTION OF THE OCCURRENCE

Occurrence category		incident
Aircraft	**manufacturer**	Piper Aircraft Corporation, USA
	type	Piper Cherokee Arrow, PA 28 R 201
	registration	SE-GVA
	serial number	28R7837027
	owner	BR Medical Service
	operator	BR Medical Service
Occurrence	**date and time**	23 August 2009
	location	LHBS
Number of injured persons	**fatal**	none
	serious	none
Aircraft damage		reparable
State of registry		Sweden
Registering authority		Luftvartsverket
Authority supervising manufacturing		FAA USA
Competent investigating organization		TSB
Time zone used in the draft report		LT

Reports and notifications

The occurrence was reported to the dispatcher of the TSB at 15:12 on 23 August 2009 by the dispatcher of the HungaroControl.
The dispatcher of the TSB:

- reported to TSB's head of department on duty at 15:16 on 23 August 2009, then
- notified the duty personnel of NTA AD at 15:35 on 23 August 2009.

Investigating committee

On 23 August 2009 The Director-General of the TSB assigned the following Investigating Committee (hereinafter referred to as IC) for the investigation of the accident:

Investigator-in-Charge (IIC)	Ottó BÍRÓ	investigator
Members:	Péter KIRÁLY	field investigator

Overview of the investigation process

The IC arrived at the scene of the accident, conducted the site survey, took photographs. The IC also interviewed the crew and received the aircraft's technical documentation from them.

A short summary of the occurrence

The aircraft's engine emitted unusual noise during the initial climb after take-off. The engine temperature rose and there was a smell of burning in the cabin. The pilot told the IC he had noticed a decrease of oil pressure too. The aircraft returned to the departure airport and landed uneventfully. The crew did not declare an emergency.

1. FACTUAL INFORMATION

1.1 History of the flight

The flight crew planned a flight from LHBS to EDDB. The pre-flight check was completed and no problems were found. The engine start and check during warm-up was also normal as well as the take-off and the initial climb. During the climb the engine noise became louder and changed. Shortly afterwards the crew noticed a smell of burning plastic. They did not experience engine performance degradation but the engine temperature increased and the oil pressure fell. The pilot decided to return to the departure airport and decreased the engine power. There was no further change in engine parametres. After an uneventful landing the aircraft was checked and it was found that the engine cowling had burnt through on the lower right side due to a loose (separated) exhaust pipe of the right front cylinder of the engine.

1.2 Injuries to persons

Injuries	Crew	Passengers	Other
Fatal			
Serious			
Minor			
None	1	1	

1.3 Damage to aircraft

The exhaust pipe got separated from the right front cylinder of the engine. As a result, the hot exhaust burned out the epoxy of the engine cowling made of composite, and created a hole in it. The damage can be repaired.

1.4 Other damage

The IC has no information on other damage.

1.5 Personnel information

1.5.1 The pilot

Age and gender		42-year old male
Licence data	**Professional valid until**	28 FEB 2011
	Medical valid until	07 FEB 2011
	Licence type	PPL(A)
	Ratings	-
Flying experience, hours/takeoffs	**Total**	350 hrs
	In the previous 30 days	50 hrs
	In the previous 7 days	2 hrs
	In the previous 24 hours	1 hr 30 mins
On the given type		70 hrs

1.6 Aircraft information

1.6.1 Certificate of airworthiness: valid until 23 APR 2010.

1.6.2 Aircraft flight time

	hours flown	**number of landings**
Since manufacturing	7546 hrs 33 mins	n/a
Since last overhaul	n/a	n/a
Since last maintenance	55 hrs 30 mins	41

1.6.3 Engine flight time

	hours flown
Since manufacturing	n/a
Since last overhaul	n/a
Since last maintenance	48 hrs

Type/grade of fuel used: 100 LL.

The aircraft's parametres had no effect on the course of the events therefore their analysis was not required.

1.7 Meteorological data

The weather conditions had no effect on the course of the events therefore their analysis was not required..

1.8 Aids to navigation

The navigational instruments had no effect on the course of events therefore their analysis was not required..

1.9 Communications

The communications instruments had no effect on the course of events therefore their analysis was not required.

1.10 Aerodrome information

The departure airport possessed a valid permit. The parametres of the airport had no effect on the course of events therefore their analysis was not required.

1.11 Flight recorders

The aircraft had neither a flight data recorder (FDR) nor a cockpit voice recorder (CVR) installed; they are not required by law or regulation for the aircraft type and the mission.

1.12 Wreckage and impact information

There was no wreckage.

1.13 Medical and pathological information

The IC does not have information on the pilot's psychophysical condition prior or during the flight.

Medical forensics examination

N/A.

1.14 Fire

There was no fire.

1.15 Survival aspects

There was no life-threatening situation in the course of events. There was no injury.

1.16 Tests and research

The IC did not conduct tests and research.

1.17 Organisational and management information

The characteristics of the organizational and management environment had no effect on the course of events therefore their analysis was not required.

1.18 Additional information

The IC does not intend to publish additional information other than the factual information above.

1.19 Useful or effective investigation techniques

The investigation did not require techniques differing from the traditional approach.

2. ANALYSIS

The IC believes that the fracture of the exhaust pipe was a result of material fatigue caused by extended vibration and dynamic loading of the tube. Hairline cracks developed, and at a point the cracks gave way to a fracture. The separated piece of the pipe was free of corrosion and burning marks. Two 2-cm long fresh fractures were visible on the perimeter of the pipe. The IC established that the engine temperature readings were high due to the exhaust gas which got inside the engine bay. The IC did not find oil leak marks on the propeller or in the engine bay. There was no measurable oil consumption. After the repair the aircraft was tested on the ground as well as in flight. The oil system was found fully functional in the course of the tests, therefore the reported oil pressure problem could not be confirmed.

3. CONCLUSIONS

3.1 Direct causes of the occurrence

The incident was caused by the fracture of the exhaust pipe as a result of metal fatigue.

4. SAFETY RECOMMENDATIONS

The IC decided not to issue a safety recommendation; it was not necessary.

Budapest, 23 March 2010.

Ottó BÍRÓ
IIC

Péter KIRÁLY
IC member

NOTE:

This present document is the translation of the Hungarian version of the Final Report.

Although efforts have been made to translate it as accurately as possible, discrepancies may occur.

In this case, the Hungarian is the authentic, official version.