



REPUBLIC OF SLOVENIA
**MINISTRY OF INFRASTRUCTURE AND SPATIAL
PLANNING**

AIRCRAFT ACCIDENT AND INCIDENT INVESTIGATION SERVICE

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Unofficial Translation

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FINAL REPORT
OF A SERIOUS INCIDENT
Diamond DA 40
Registration OE-DKK on 01.03.2013
at Near Maribor Airport – LJMB

Republic of Slovenia

» 2013 «

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INTRODUCTION

The final report on the investigation of aviation incidents contains the facts, analyze the causes and safety recommendations identified by the Commission for the investigation of aviation accidents depending on the circumstances in which the incident occurs.

In accordance with Article 3.1 of the tenth issue of Annex 13 to the Chicago Convention, 1 Article of Regulation (EU) No. 996/2010 of the European Parliament and of the Council of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation and repealing Directive 94/56/EC (OJ L. 295 of 12.11.2010 p. 35), fourth paragraph 137 of the Aviation Act - official consolidated text UPB-4 (Official Journal. RS, no. 81/2010), 2 Article of the Regulation on the investigation of aircraft accidents, serious incidents and incidents (Official Gazette of RS, no. 72/03 and 110/05) is not the purpose of the final report of the determination of guilt or individual or collective responsibility. The basic objective of the final report of the prevention of air accidents and reduce risks in the future.

It is true that the final report on the investigation to benefit flight safety.

It is important that the final investigation report to be used for the prevention of aviation accidents or incidents. Using the final report on the investigation of an aviation accident or incident for other purposes can lead to false interpretations.

COMPOSITION OF THE COMMISSION FOR THE INVESTIGATION

Head of investigating aviation accidents and incidents in the Ministry of Infrastructure and Spatial Planning is under 5 of Regulation (EU) No. 996/2010 of the European Parliament and of the Council on investigation and prevention of accidents and incidents in civil aviation (OJ L. 295 of 12.11.2010, p. 35), 138 of the Aviation Act LET-OCT4 (Official Gazette of RS, no. 81/2010) and 7 of the Regulation on the investigation of aircraft accidents, serious incidents and incidents (Official Gazette of RS, no. 72/03 and 110/05) with resolution no. 37201-2/2013/5-00121171 on 07/06/2013 appointed a commission to investigate the incident, with the aim of investigating the circumstances in which it occurred, identifying the causes and producing recommendations for the prevention of air accidents in the future.

Composition of the Committee:

1. **Toni STOJČEVSKI**, Ministry of Infrastructure and Spatial Planning, Aircraft Accident and Incident Investigation Service, **Investigator – in – Charge**.

SUMMARY

1. Date and hour of the incident: 1 March 2013, 13:29 UTC (*)

2. Aircraft: Diamond DA 40 D

3. Registration number: OE-DKK

4. Location: 2.5 miles south of Maribor Edvard Rusjan Airport (LJMB), Slovenia,
(N 46 27 10,27 ; E 15 42 32,56).

5. Type of Flight: VFR, (private)

6. Owner: AAC – Austrian Aircraft Corporation, Austria

7. Operator: AAC – Austrian Aircraft Corporation, Austria

8. Persons on Board: Crew 1, Passengers 1

7. Consequences:

8.1 Injuries:

<i>Injuries</i>	<i>Crew</i>	<i>Passengers</i>	<i>Other</i>
Fatal	/	/	/
Serious	/	/	/
Minor / None	0 / 1	1	

8.2 Damage to Aircraft: No Damage

(*) The time referred to in this report is the Coordinated Universal Time, UTC.
On the date of the accident, one hour must be added for Slovenian local time (UTC+1).

I. GENERAL

The pilot and passenger took off from the airport in Graz on 01.03.2013 at 14.00 pm local time (LOWG) in order to make a flight over the airport Edvard Rusjan (LJMB) Maribor and they were to return to the home Airport after a couple of circuits . There had been a partial failure of the engine at the airport LJMB in the landing phase by re-take-off (Touch and Go). Engine speed has rapidly decreased in a critical phase of the take-off at an altitude of 400-500 feet above ground level which caused the plane to loss climb power.

The pilot decided to land immediately in the direction of the snow-covered terrain without obstacles approximately 2 km south of the elevation runway. The pilot stopped the engine after landing and together with the passenger they sought help and reported the incident to the nearby police station. The Aircraft and crew did not suffer any injuries.

The same day the Commission for the investigation of aviation accidents and incidents inspected the site of the event.



Figure 1- Emergency landing 2,5 km south in the RWY

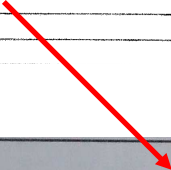
II. FINDINGS

1. After the examination of the airplane at the event location, an actual cause of the partial failure of the engine or any apparent mechanical damage had not been determined. Pilot said that the engine did not completely stop and that although the engine was still running, the propeller did not provide thrust. The pilot stated he was unable to maintain altitude.
2. In reviewing the airplane documentation it was found that a periodic technical inspection of 100 hours on the aircraft was conducted a day or two before the critical date by an authorized maintenance organization and that on the day of the event a verification of the aircraft in the air (test flight) was performed. There were no comments which would restrict the airworthiness of the airplane.
3. After analyzing the incident and reviewing the documentation of exploitation of the aircraft it was found that the pilot in the emergency procedure or procedure in emergency acted according the instructions of the manufacturer ** (check list) for this aircraft.
4. In reviewing the documentation of the aircraft together with the Austrian Civil Aviation Safety Investigation Authority (ACASIA), it was found that the pilot did not include all the necessary information on the planned flight. The pilot stated that he has completed pre-flight inspection but did not enter the information in the aircraft log book. It was found that the owner or the maintenance organization did not include information on filling the fuel in the flight booklet. The information about the amount of fuel before the flight was not recorded as an information of the crew in the pre-flight inspection (Figure 3 and Figure 4).
5. After obtaining the documentation on system of digital control or recordings of the engine (ECU - Engine Control Unit) and reports of the maintenance organization in the internal investigation, it was found that the organization maintenance error occurred when connecting the aircraft fuel installations.

**** WARNING:***If, in the event of an engine problem occurring during take-off, the take-off can no longer be aborted and a safe height has not been reached, then a straight-ahead emergency landing should be carried out. Turning back can be fatal.*

6. In the process of investigation and analysis of the submitted reports, it was found that there had been an improper installation of the fuel hose between the fuel filter and low pressure pump in the last periodical technical inspection of the aircraft at maintenance organization. There has been uneven performance of installations and power at a critical time due to a fuel installations mismatch.

Gesamtstd./T.S.N.: 2599:51		Flugzeugtyp/Aircraft Type: DA40-TDI	Engine Type: TAE-125-2-99
seit Grundüberholung/T.S.O.:		Serien Nr./Serial No.: D4.100	Serien Nr./Serial No.: 02-02-02925
No.	Art der Beanstandungen/Complaint	Art der Behebung/Action	Mechanic
1.	LFZ nach Außenlandung wegen Leistungsverlust in Marburg abrüsten.	LFZ enttankt sämtliche Verkleidungen demontiert R/H und L/H Querruder und Landeklappen abgeschlossen Kraftstoff Leitungen abgeschlossen R/H und L/H Flächen demontiert Leitwerk abgeschlossen und demontiert. LFZ auf LKW verladen und nach Graz (LOWG) transportiert.	
2.	Zellenübersichtskontrolle durchführen	Zellenübersichtskontrolle durchgeführt. Ohne Beanstandung	
3.	Wing pre installation check durchführen	Fläche sowie Rumpf gem. MM 57-10 kontrolliert	
4.	Motorübersichtskontrolle durchführen	Motorübersichtskontrolle durchgeführt, Kraftstoffleitung zwischen Filter und Low Press.Pump locker, Leitung festgezogen. Motordaten ausgelesen und zur Fa. Thielert gesendet	



4	Motorübersichtskontrolle durchführen	Motorübersichtskontrolle durchgeführt, Kraftstoffleitung zwischen Filter und Low Press.Pump locker, Leitung festgezogen. Motordaten ausgelesen und zur Fa. Thielert gesendet
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Figure 2. Internal investigation report

III. FACTS

1. The pilot had a valid Pilot's licence and medical certificate.
2. Aircraft had a valid airworthiness certificate.
3. Pilot had properly chosen an area for an emergency landing at the failure of the engine at a small height and landed successfully.
4. Meteorological conditions did not affect the event.
5. There is an irregularity in current liabilities entered in the aircraft logbook by the pilot and the operator or maintenance organization.
6. In the last technical service of the aircraft at the maintenance organisation, there had been some irregularities in relation to fuel installations and consequently a partial failure of the engine in the take-off phase at the Maribor airport.

IV. CONCLUSIONS

The direct cause of the accident:

The direct cause of the incident is the partial failure and loss of engine power in the take-off stage.

The indirect cause of the accident:

The indirect cause of the incident was an incorrect connection of the fuel hose between the fuel filter and low pressure pump at a periodic technical service at an authorized maintenance organization, which resulted in irregular engine operation at a critical stage of obtaining height after landing with take-off again (Touch and Go).

V. RECOMMENDATIONS

Given the cause of this serious incident, the Aircraft Accident and Incident Investigation Service has no safety recommendations to make.

VI. APPENDIX – FIGURES

The different information on the quantity of fuel

-DKK

5 (X)	6 (V)		7 (VII)		8 (VI)		9 (VIII)		10 (XI)									
Zweck des Fluges (Purpose of Flight) u. dgl.	Abflug (Departure)		Landing (Arrival)		Flugzeit (Hours of Flight)		Jeweilige Gesamtflugzeit seit der letzten Grundüberholung		11		12		13		14 (XII)		a) Unfälle, sonstige Mängel, b) Bestätigung der Satzungs-Arbeiten c) Vormerkung von	
	Ort (Place)	Zeit (Time)	Ort (Place)	Zeit (Time)					Treibstoff	Schmier- stoff	Bestätigung (Stampel und Unter- schrift) sowie Vermerke (Signature of Person in Charge)							
	2	LOWG	1407	LOWG	Y	1510	103											
S-FI-SH	LOWG	1426	LOWG	Y	1510	44												
	1	LOWG	1715	LOWG	Y	1755	40											
	3	LOWG	1340	LOWG	Y	1445	105											
Flug	LOWG	1027	LOWG	N	1109	042												

11		12		13		14 (XII)	
Treibstoff	Schmier- stoff	Bestätigung (Stampel und Unter- schrift) sowie Vermerke (Signature of Person in Charge)					
2595	08						
2596	11						
2596	55	23	A			1409	1517
2597	35					1392,6	1705
2598	40					1393,7	1759
2599	22	57	L			1017	1114
						3386,9	1114

Information on the flight and amount of fuel had not been recorded in the aircraft log book.

Figure 3. Data on the first flight on the 1 March 2013


Abflug (Departure)		Landing (Arrival)		Flugzeit (Hours of Flight)		Jeweilige Gesamtflugzeit seit der letzten Grundüberholung		Betriebsstoff- aufnahme		Bestätigung (Stampel und Unter- schrift) sowie Vermerke (Signature of Person in Charge)		a) Unfälle, sonstige F Mängel, b) Bestätigung der D setzungs-Arbeiten c) Vormerkung von W
Ort (Place)	Zeit (Time)	Ort (Place)	Zeit (Time)	Treibstoff	Schmier- stoff							
LOWG	1407	LOWG	Y	1510	103							
LOWG	1426	LOWG	Y	1510	44							
LOWG	1715	LOWG	Y	1755	40							
LOWG	1340	LOWG	Y	1445	105							
LOWG	1027	LOWG	N	1109	042							
LOWG	1300	LOWG	N	1329	029							

11		12		13		14 (XII)	
Treibstoff	Schmier- stoff	Bestätigung (Stampel und Unter- schrift) sowie Vermerke (Signature of Person in Charge)					
2595	08						
2596	11						
2596	55	23	A			1409	1517
2597	35					1392,6	1705
2598	40					1393,7	1759
2599	22	57	L			1017	1114
2599	51					3386,9	1114

Subsequently written information about the crew and the amount of fuel

Figure 4. Data on the second flight on the 1 March 2013

Andere beteiligte Luftfahrzeuge Other Aircraft Involved: /		Registrierung Registration: /	Kennzeichen Callsign: /
FO_LFA_PPS_004_v4.0		Seite 1 von 4	



Ausfall/Fehlfunktion/Mangel am LFZ/Komponenten/Einrichtungen Defect/Malfunction/Failure on Aircraft/Components/Facilities:			
<input type="checkbox"/> Technisches Vorkommnis am Luftfahrzeug Technical Occurrence on Aircraft		<input type="checkbox"/> Instandhaltung, Instandsetzung, Herstellung Maintenance, Repair, Manufacture	
<input type="checkbox"/> ATM-/ANS-Einrichtungen ATM-/ANS-Facilities		<input type="checkbox"/> Flugplatzeinrichtungen und Bodendienste Aerodrome Facilities and Ground Services	
Beschreibung (gegebenenfalls die Bezeichnung des Ergebnisses gemäß Anhang 1 und 2 der ZMV) Description of Occurrence:			
Hersteller Manufacturer:		Muster, Bauteilname, P/N Model, Part Name, Part No.:	Seriennummer Serial No.:
Betriebszeit seit Überholung/ Time and/or Cycles since Overhaul TSO/CSO:		Time since TSN/CSN:	
Hrs:	Cyc:	Hrs:	Cyc:
ATA-Code (4-stellig)/ ATA-Code (4 digits):		ATA-Code (4-stellig)/ ATA-Code (4 digits):	

Beladung*) Weights	
Gesamtflugmasse [kg] Total Mass [kg]:	1.082
Treibstoff an Bord [Liter-kg-lbs] Fuel on Board [Liter-kg-lbs]:	76 LITER
Art des beförderten Gefahrgutes Type of Carried Dangerous Goods on Board: /	

Beteiligte Personen Involved Persons:			
Familiennamen Family Name:	Vorname First Name:	Funktion Function (on Board):	Gültige Lizenz/ Valid Licence: PPL(A)
DRALLER	REINHOLD	PIC	A-1945-JAR
Familiennamen Family Name:	Vorname First Name:	Funktion Function (on Board):	Gültige Lizenz/ Valid Licence:
Familiennamen Family Name:	Vorname First Name:	Funktion Function (on Board):	Gültige Lizenz/ Valid Licence:

Beladung*) Weights	
Gesamtflugmasse [kg] Total Mass [kg]:	1.082
Treibstoff an Bord [Liter-kg-lbs] Fuel on Board [Liter-kg-lbs]:	76 LITER
Art des beförderten Gefahrgutes Type of Carried Dangerous Goods on Board: /	

Figure 5. Data from Occurrence reporting documentation



DELIVERY CERTIFICATE
BP Europa SE, Zweigniederlassung BP Austria
 2353 W. Neudorf, 12100-Sied. StraÙe 6, Objekt 1
 LG Wiener Neustadt, FN 343335, DVR: 4002189, UID: ATU4459390
BP Europa SE, D-22761 Hamburg, Max-Born StraÙe 1
 Amtsgericht Hamburg, HRB 11361

1. Delivery Date	2. Airport	3. Airport Code	4. Receipt No.
28 02 12	Graz	G R Z 0	092500
10. Quantity Delivered	11. Measure	12. Price	13. Price
000057	Liter	Cents/US\$	
14. (M = Mixture of Fuel or Control)	15. Product	18. Pilot's Initials	
	JET A-1	X	
16. Aircraft Registration	17. External Flight	A	
OE-DKK	Internal Flight	B	
	Liability Tax/MOEST	C	
18. Customer's Name	AAC		
Space for Plastic Carnet	<input type="checkbox"/> Commercial Flight <input type="checkbox"/> Other Flight <input type="checkbox"/> Liability to VAT/US		
Quality Certification Statement Certified that the products detailed herein conform to the relevant specifications and have been handled in accordance with the quality control procedures laid down in Air BP Regulations.			

1. Delivery Date					2
28	02	12			
10. Quantity Delivered					1
000057					

Figure 6. Delivery Certificate (Quantity Delivered 57 lit.)

Toni STOJČEVSKI
Investigator-in-Charge