

FINAL REPORT

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In accordance with the provisions of SI 205 of 1997, the Chief Inspector of Accidents, on 9 May 2007, appointed Mr. John Hughes as the Investigator-in-Charge to carry out a Field Investigation into this incident and prepare a Synoptic Report.

Aircraft Type and Registration:	Grob 115A, EI-CAC
No. and Type of Engines:	1 x Lycoming O-235-H2C
Aircraft Serial Number:	8092
Year of Manufacture:	1989
Date and Time (UTC):	17 May 2004 @ 12.00 hrs
Location:	Kilrush Airfield
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - Nil
Injuries:	Crew - Nil Passengers – Nil
Nature of Damage:	None
Commander's Licence:	Student Pilots Licence (SPL)
Commander's Details:	Male, aged 44 years
Commander's Flying Experience:	40 hours of which 35 hours were on type
Notification Source:	Aircraft Operator
Information Source:	Aircraft Operator

SYNOPSIS

The aircraft was on a routine training flight when the Pilot noticed a persistent smell of fuel. The Pilot landed immediately. Subsequent inspection found that the left pedal rudder control rod had been rubbing against a flexible fuel hose in the cockpit and that the hose had worn through allowing fuel to leak into the cockpit. As a result of this Investigation, the aircraft Manufacturer issued Service Bulletin 1078-152 in order to rectify this problem on all G 115 /G 115A aircraft.

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1. FACTUAL INFORMATION

1.1 History of the flight

The student Pilot took off from Weston Aerodrome. After some time in the air he noticed a strong smell of fuel fumes in the cockpit. The Pilot then decided to divert to a nearby airfield. He landed safely and exited the aircraft in the normal way. There were no reported injuries. An examination by a licensed engineer revealed a damaged fuel hose in the cockpit.

1.2 Aircraft Information

1.2.1 General

The aircraft is a two seat basic trainer with a maximum take-off weight of 850 kg (1874lb). The G115-A was certified to FAR Part 23 standard by the LBA in 1987 and by the CAA a year later. It is certified in the Normal and Utility, non aerobatic category. The aircraft is driven by one 85kW (115hp) Textron Lycoming O-235H2C flat four piston engine. This aircraft, Serial 8092, was manufactured in 1989. At the time of this incident the aircraft had a total of 2,575 hours flown and the engine had accumulated 1,348 hours.

1.2.2 Aircraft Examination

Upon examination of the cockpit area by the Operator, it was found that the smell was due to a leak in the feed hose from the fuel selector valve to the back of the firewall. The hose had been rubbing against the rudder pedal crossbar (the adjoining bar that links both rudder pedal units – see **Appendix A**), for what must have been a reasonably long period of time. The hose in question was removed and in due course a length of this hose was forwarded to the AAIU.

When the Operator checked his second aircraft, Grob G115A (Serial No. 8104) registration EI-CAD, they found that the exact same wear pattern had occurred on the hose and it was about to commence leaking fuel.

The Operator then checked a third aircraft, G-BYFD (Serial 8100) and this again had the same problem. In all three cases, the length of hose in question was replaced. It would appear that the original hose units were marginally too short causing them to be in the way of the rudder crossbar. The Operator checked the fourth Grob G115A of the fleet and the hose did not appear to be impinging upon the rudder mechanism, and did not have any wear marks on it.

The Operator replaced all the affected units with 20 mm longer hoses. The Manufacturer did specify an exact length for the hose in question (1,120 mm), but the Operator found that in using this specified hose, it impinged upon the rudder control linkage.

1.2.3 Aircraft History

EI-CAC had not flown from May 1992 until June 1997 when at 1,228 hours considerable work was carried out on this aircraft. This work included the replacement of fuel hose 831-9,5. The UK CAA Light Aircraft Maintenance Schedule (LAMS) requires that fuel hoses be pressure tested at 72 months from new and then every 36 months thereafter. However, the German aircraft Manufacturer requires that this hose be replaced with a new hose at 5-year intervals.

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1.3 Investigation Techniques

The Investigation informed the Manufacturer's Product Support, the FBU (German Federal Bureau of Accident Investigation) and the LBA (Federal Office of Civil Aeronautics) of this occurrence.

They were informed that the Operator replaced the damaged pipe which was done by purchasing lengths of the appropriate hose and cutting them to the specified lengths (which was 1,120 mm in this case). When the Operator fitted the hose he found that there was still interference between the rudder control rod and the new hose. He found that by lengthening the hose by 20 mm the interference was prevented.

1.4 Manufacturer's Action

In accordance with their Design Organisation Handbook the Manufacturer classified the incident "Routine", since it was caused by a maintenance shortfall. Nevertheless, in October 2004, they decided to publish a Service Bulletin No. MSB1078-152, requiring a one-time inspection of the subject area as a precautionary measure to preclude possible similar maintenance shortfalls. In addition to that, an exchange of the fuel hoses by steel pipes, which were introduced in 1991 as an option under Service Bulletin 1078-21, is required either if chaffing is found or at the latest after the expiration of the regular 5-year time change interval. However, Service Bulletin 1078-21 is required to be carried out at the Manufacturer's plant or in close conjunction with them.

The SB No. MSB1078-152 is approved by EASA and states:

All fuel hoses are subject to exchange every 5 years, unless maintenance-free fuel pipes (steel) are installed. As a precautionary measure a one-time inspection of the fuel hoses is required to preclude possible similar maintenance shortfalls. Defective fuel hoses must be exchanged against maintenance-free fuel pipes immediately.

In case no signs of chafing or leakage are found, SB 1078-21 must be incorporated latest after the expiration of the regular 5-year time change interval.

2. ANALYSIS

Where there is a discrepancy between the LAMS requirement and the Manufacturer's servicing requirements, then those of the Manufacturer take precedence. The subject hose should therefore have been replaced five years after installation in the aircraft. The hose could also have been replaced by a steel pipe, as this was an option at the time.

As this potential defect in the fuel system has been rectified by the aircraft Manufacturer's servicing requirements, both before and after the incident date, the Investigation does not propose to make any Safety Recommendations.

3. CONCLUSIONS

(a) Findings

The fuel leaked from a damaged hose in the cockpit.

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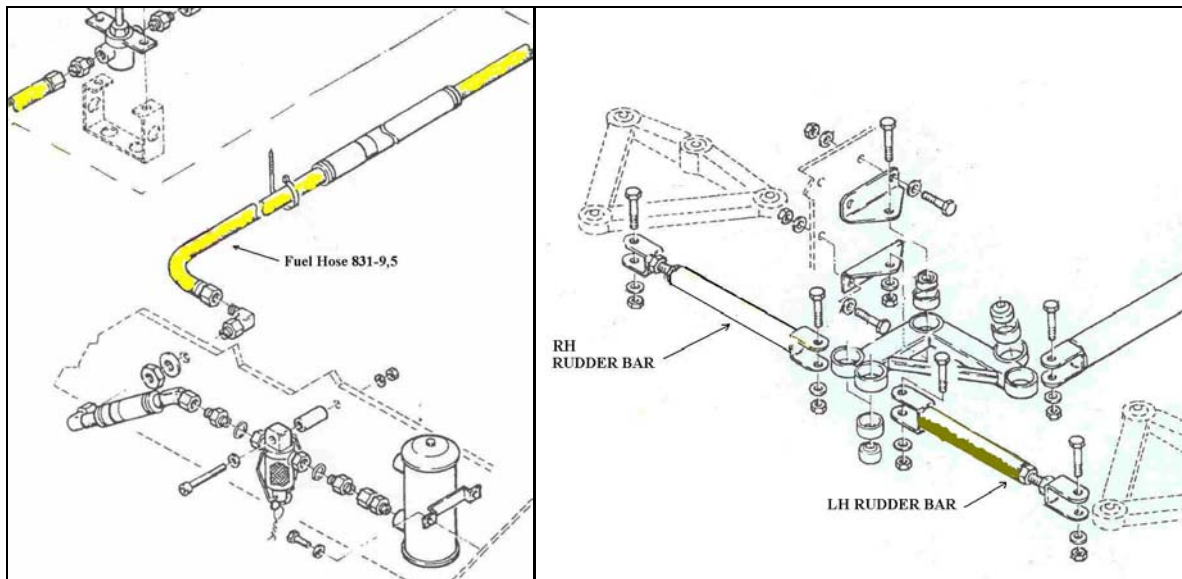
(b) Cause

The hose was overdue replacement as per the aircraft Manufacturer's requirements.

4. SAFETY RECOMMENDATIONS

This Investigation does not sustain any Safety Recommendations

Appendix A



The fuel hose (831-9,5), which rubbed against the LH rudder pedal crossbar

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