



Air Accident Investigation Unit Ireland

INCIDENT REPORT **Reims Aviation Cessna 172M, EI-GSE** **Near Maynooth, Co.Kildare** **19 February 2011**



**An Roinn Iompair
Turasóireachta agus Spóirt**

Department of Transport,
Tourism and Sport

AAIU Final Report No: 2012-011

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In accordance with the provisions of SI 460 of 2009, the Chief Inspector of Air Accidents, on 19 February 2011, appointed Mr. Graham Liddy as the Investigator-in-Charge to carry out a Field Investigation into this Incident and prepare a Report. Due to retirement, the Chief Inspector, Mr. Jurgen Whyte appointed himself, on the 29 February 2012, as the Investigator-in-Charge to complete the Investigation. The sole purpose of this Investigation is the prevention of aviation Accidents and Incidents. It is not the purpose of the Investigation to apportion blame or liability.

Aircraft Type and Registration:	Reims Aviation Cessna 172M, EI-GSE
No. and Type of Engines:	1 x Lycoming 0-320-E2G
Aircraft Serial Number:	1105
Year of Manufacture:	1974
Date and Time (UTC):	19 February 2011 @ 14.57 hrs.
Location:	Near Maynooth, Co.Kildare
Type of Operation:	General Aviation - Navigation Exercise
Persons on Board:	Crew - 2 Passengers - Nil
Injuries:	Crew - None
Nature of Damage:	Engine component failure
Commander's Licence:	Irish CPL(A)
Commander's Flying Experience:	3,000 hours, of which 1,500 were on type
Notification Source:	Weston Airport Tower.
Information Source:	AAIU Field Investigation



SYNOPSIS

The Instructor and Student departed Weston (EIWT) on a navigational exercise in a northwest direction towards Donegal. Near Athboy, Co Meath, the engine oil pressure dropped off without warning and the Instructor decided to terminate the exercise and route back to Weston. However, just north of Maynooth, the engine started to run roughly and to lose RPM. The Instructor decided to carry out an immediate forced landing at a nearby private airfield rather than attempt to reach Weston. This landing was safely executed and the crew exited the aircraft without further incident. There were no injuries.

1. FACTUAL INFORMATION

1.1 History of the Flight

This instructional flight departed EIWT in good weather conditions for a navigational exercise towards Donegal, with diversions planned en route to test the student's track recovery skills. The route took them towards the Athboy/Kells area. Southeast of Athboy the Instructor noticed that the engine oil pressure had dropped to a very low reading, almost to zero.

Initially, he suspected a faulty reading on the oil pressure gauge, as the oil temperature gauge was holding steady, about 1/3 into its range. However, he decided to terminate the exercise and route back to Weston. About one mile north of Maynooth, the engine started to run roughly and loose RPM. The Pilot recalled that it dropped a couple of hundred RPM and, even with higher power selected, it would not increase again. He decided to carry out a precautionary landing at the adjacent Dolly's Grove private airfield rather than continue to Weston.

He informed Weston ATC of his intentions. The engine maintained some power and he carried out a normal landing on the asphalt runway. On shut-down the Instructor inspected underneath the aircraft and saw it was quite clean. Earlier, he had checked the oil level prior to flight; he now saw that it was more or less the same of 5 US quarts reading. Shortly afterwards an AAIU Inspector of Air Accidents examined the aircraft in-situ and noted how clean it looked. He agreed that the Operator could remove the engine and requested that the AAIU be copied with the subsequent engine teardown report.

1.2 Damage to Engine

The Operator sent the engine to a UK based engineering company to investigate the cause of the reported low engine oil pressure. Their Report reads as follows:

'Dismantling of the engine has revealed a catastrophic failure of No. 3 connecting rod bearing insert. The bearing insert has been destroyed beyond inspection. Both the crankshaft bearing journal and the connecting rod big end housing have suffered from mechanical damage and severe overheating. The crankshaft has suffered from minor impact damage caused by the failed bearing insert being shed by the rotating crankshaft. All piston skirts have a lot of ferrous debris embedded, the source being the failed crankshaft bearing. No cause of the above damage was found during the inspection. No other components appear to have suffered from any damage beyond what is considered normal wear and tear.'

1.3 Aircraft Information

The aircraft, a Reims Aviation Cessna 172M, was found to have been well maintained. It had a valid non-expiring EASA certificate of airworthiness (No 1556R4) last issued on the 21 August 2009. An Airworthiness Review Certificate, which was completed by the Operator, was in accordance with their Part M subpart G approval and was issued on the 20 August 2010 and valid until the 19 August 2011.

2 ANALYSIS

This was to have been a routine cross-country training flight with diversions built in to test the student's situational awareness and ability to recover to pre-planned tracks. However, nearing Athboy the situation changed in the cockpit with the sudden drop on the engine oil pressure gauge. The Instructor took the prudent decision to back-track towards Weston. However, while approaching Maynooth and not too many flying miles from Weston, circumstances changed again with the rough running of the engine and loss of engine RPM.

While the Instructor recalled that he had no evidence such as smoke or smell to confirm the engine malfunctioning, he could have 'pressed on' but, fortunately, he did not. His experience told him that to 'land immediately' was his only and safest option. Fortuitously, there was a well-appointed private airfield on the flight path, where he landed safely and without any further damage to the aircraft.

3. CONCLUSIONS

(a) Findings

1. The Instructor's decision to land immediately was correct and timely. This was borne out by the subsequent technical inspection of the engine which revealed a catastrophic failure of the No. 3 connecting rod bearing insert.
2. Due to the extent of the No. 3 connecting rod bearing insert damage, the initiating failure could not be determined.

(b) Probable Cause

1. Catastrophic component failure - No. 3 connecting rod bearing insert.

4. SAFETY RECOMMENDATIONS

This Investigation does not sustain any Safety Recommendations

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In accordance with Annex 13 to the International Civil Aviation Organisation Convention, Regulation (EU) No 996/2010, and Statutory Instrument No. 460 of 2009, Air Navigation (Notification and Investigation of Accidents, Serious Incidents and Incidents) Regulation, 2009, the sole purpose of these investigations is to prevent aviation accidents and serious incidents. It is not the purpose of any such accident investigation and the associated investigation report to apportion blame or liability.

A safety recommendation shall in no case create a presumption of blame or liability for an occurrence.

Produced by the Air Accident Investigation Unit

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