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Applicability: Flight Examiners, Flight Instructors

SIMULATING ENGINE FAILURES IN LIGHT PISTON MULTI-ENGINE AEROPLANES

Introduction

At the 2025 Flight Examiner Seminar, CAA staff were asked to review the method of simulating an engine failure, in light piston multi-engine aeroplanes, for the purpose of flight training and flight testing.

Background

Apart from aeroplanes using SPLC (Single Power Lever Control) the most common method for simulating an engine failure, in New Zealand, has been to move the mixture control to ICO (Idle Cut-Off). Other regulators have for many years discouraged this method, particularly below 3,000ft, and instead have recommended moving the throttle to the idle position.

The practice for using the mixture control to simulate an engine failure originates from concerns over potential engine damage when using the throttle. However, this potential for damage usually occurs when the throttle is closed rapidly, not when it is closed gradually. Sudden catastrophic failure of modern engines is rare, and a more gradual reduction in power available is more likely in an actual engine failure. Therefore, a slow reduction of power using the throttle presents a more realistic real-life scenario.

Use of the mixture control at circuit altitude may not allow sufficient time for examiners or instructors to recover from errors by the student or candidate. Whereas, the use of the throttle lever ensures the engine is kept running and available for instant use, if necessary.

Recommendation

Unless prohibited or not recommended in the Aircraft Flight Manual, CAA recommends when simulating an engine failure below 3,000ft agl, a slow and smooth reduction of power using the throttle lever.

This recommendation does not preclude the use of the mixture control for simulating an engine failure, or for intentional engine securing in training, when above 3,000ft agl.

References

- National Transportation Safety Board Warning on Simulated Engine-Out Maneuvers – Lycoming

- CASA CAAP 5.23-1(2) Multi-engine aeroplane operations and training
- FAA Airplane Flying Handbook Chapter 12 Transition to Multi-engine Airplanes