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TANZANIA CIVIL AVIATION AUTHORITY
Aeronautical Information Services

AERONAUTICAL INFORMATION CIRCULAR

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This following circular is hereby promulgated for information, guidance and necessary action.

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Director General

TURBO-PROP ENGINES-SIMULATED FAILURE ON TAKE -OFF

1. A previous Aeronautical Information Circular issued by the UK Civil Aviation Authority, recommends that when it is necessary to simulate an engine failure at low altitude, this should be done by throttling the engine rather than by shutting it down completely. This is still considered to be the best general advice. However, the investigation of recent incidents, involving aeroplanes during training with a simulated engine failure, has led to the conclusion that with turbo-prop aircraft the simulation of an engine failure by throttling back can introduce particular handling and performance problems. These problems must be appreciated and due allowance must be made for them, if the improvement in safety which should be brought about by compliance with the recommendation mentioned above is not to be compromised.

2. The primary problem arises from the fact that, in many instances a turbo-prop engine which has been throttled back to the flight idle setting will produce a greater drag than will an engine which has failed and auto feathered. Because of this it is common practice in training exercise on turbo-prop aircraft to close the throttle only to a predetermined zero-thrust throttle setting instead of all the way back to the flight idle position.

3. A further problem is that the automatic feathering or drag limiting devices which are fitted to most turboprop engines are for the most part made inoperative when the engine is throttled back. Consequently, if an engine which has been throttled back to simulate engine failure suffers a real failure, it may go to a very high drag, wind milling condition, remaining unfeathered unless and until the correct feathering action is taken by the crew or the throttle is fully opened. Further, because the engine is at a low-power condition, recognition of the failure will not be easy, and there is a danger that the failure may not be noticed until severe handling difficulties are encountered.

4. There are two important consequences of the high drag situation described in 2 and 3 above:

(a) An increase in thrust/drag asymmetry, as a result of which the actual minimum control speed will be greater than the figure published in the Flight Manual. The airspeed at the time may be less than the actual minimum control speed, causing control difficulties or loss of control.

(b) A reduction in performance leading to a reduction of clearance over obstacles, and particularly if over rote to an increased danger of losing speed after lift-off. Any such loss of speed will rapidly exacerbate the handling situation.

5. Many operators of turbo-prop aircraft have already appreciated these problems and developed appropriate procedures to minimise the hazard of engine-out training. Those who have done so are recommended to examine their engine-out training procedures in the light of the above. The Appendix to this circular offers guidance on the procedures which can be adopted. However, it is appreciated that there may be more than one way of achieving a safe operation, and those operators who have adopted different practices should continue to use them if they are satisfied that they provide an adequate level of protection from the hazards described in this circular.

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