

Appendix to Chapter 3

NOISE ABATEMENT DEPARTURE CLIMB GUIDANCE

1. General

1.1 Aeroplane operating procedures for the take-off climb shall ensure that the necessary safety of flight operations is maintained while minimizing exposure to noise on the ground. The following two examples of operating procedures for the climb have been developed as guidance and are considered safe when the criteria in 3.2 are satisfied. The first procedure (NADP 1) is intended to provide noise reduction for noise-sensitive areas in close proximity to the departure end of the runway (see Figure I-7-3-App-1). The second procedure (NADP 2) provides noise reduction to areas more distant from the runway end (see Figure I-7-3-App-2).

1.2 The two procedures differ in that the acceleration segment for flap/slat retraction is either initiated prior to reaching the maximum prescribed height or at the maximum prescribed height. To ensure optimum acceleration performance, thrust reduction may be initiated at an intermediate flap setting.

Note 1.— For both procedures, intermediate flap transitions required for specific performance-related issues may be initiated prior to the prescribed minimum height; however, no power reduction can be initiated prior to attaining the prescribed minimum altitude.

Note 2.— The indicated airspeed for the initial climb portion of the departure prior to the acceleration segment is to be flown at a climb speed of $V_2 + 20$ to 40 km/h (10 to 20 kt).

2. Noise abatement climb — Example of a procedure alleviating noise close to the aerodrome (NADP 1)

2.1 This procedure involves a power reduction at or above the prescribed minimum altitude and the delay of flap/slat retraction until the prescribed maximum altitude is attained. At the prescribed maximum altitude, accelerate and retract flaps/slats on schedule while maintaining a positive rate of climb, and complete the transition to normal en-route climb speed.

2.2 The noise abatement procedure is not to be initiated at less than 240 m (800 ft) above aerodrome elevation.

2.3 The initial climbing speed to the noise abatement initiation point shall not be less than $V_2 + 20$ km/h (10 kt).

2.4 On reaching an altitude at or above 240 m (800 ft) above aerodrome elevation, adjust and maintain engine power/thrust in accordance with the noise abatement power/thrust schedule provided in the aircraft operating manual. Maintain a climb speed of $V_2 + 20$ to 40 km/h (10 to 20 kt) with flaps and slats in the take-off configuration.

2.5 At no more than an altitude equivalent to 900 m (3 000 ft) above aerodrome elevation, while maintaining a positive rate of climb, accelerate and retract flaps/slats on schedule.

2.6 At 900 m (3 000 ft) above aerodrome elevation, accelerate to en-route climb speed.

3. Noise abatement climb — Example of a procedure alleviating noise distant from the aerodrome (NADP 2)

3.1 This procedure involves initiation of flap/slat retraction on reaching the minimum prescribed altitude. The flaps/slats are to be retracted on schedule while maintaining a positive rate of climb. The power reduction is to be performed with the initiation of the first flap/slat retraction **or** when the zero flap/slat configuration is attained. At the prescribed altitude, complete the transition to normal en-route climb procedures.

3.2 The noise abatement procedure is not to be initiated at less than 240 m (800 ft) above aerodrome elevation.

3.3 The initial climbing speed to the noise abatement initiation point is $V_2 + 20$ to 40 km/h (10 to 20 kt).

3.4 On reaching an altitude equivalent to at least 240 m (800 ft) above aerodrome elevation, decrease aircraft body angle/angle of pitch while maintaining a positive rate of climb, accelerate towards V_{ZF} and either:

- a) reduce power with the initiation of the first flap/slat retraction; or
- b) reduce power after flap/slat retraction.

3.5 Maintain a positive rate of climb, and accelerate to and maintain a climb speed of $V_{ZF} + 20$ to 40 km/h (10 to 20 kt) to 900 m (3 000 ft) above aerodrome elevation.

3.6 On reaching 900 m (3 000 ft) above aerodrome elevation, transition to normal en-route climb speed.

3.7 An aeroplane should not be diverted from its assigned route unless:

- a) in the case of a departing aeroplane it has attained the altitude or height which represents the upper limit for noise abatement procedures; or
- b) it is necessary for the safety of the aeroplane (e.g. for avoidance of severe weather or to resolve a traffic conflict).

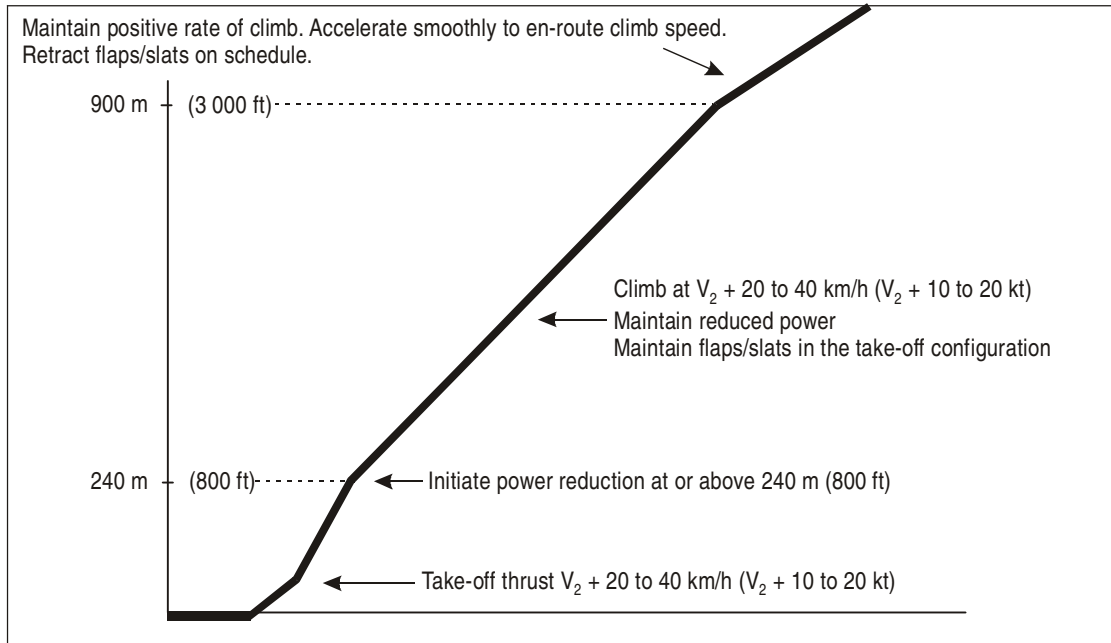


Figure I-7-3-App-1. Noise abatement take-off climb — Example of a procedure alleviating noise close to the aerodrome (NADP 1)

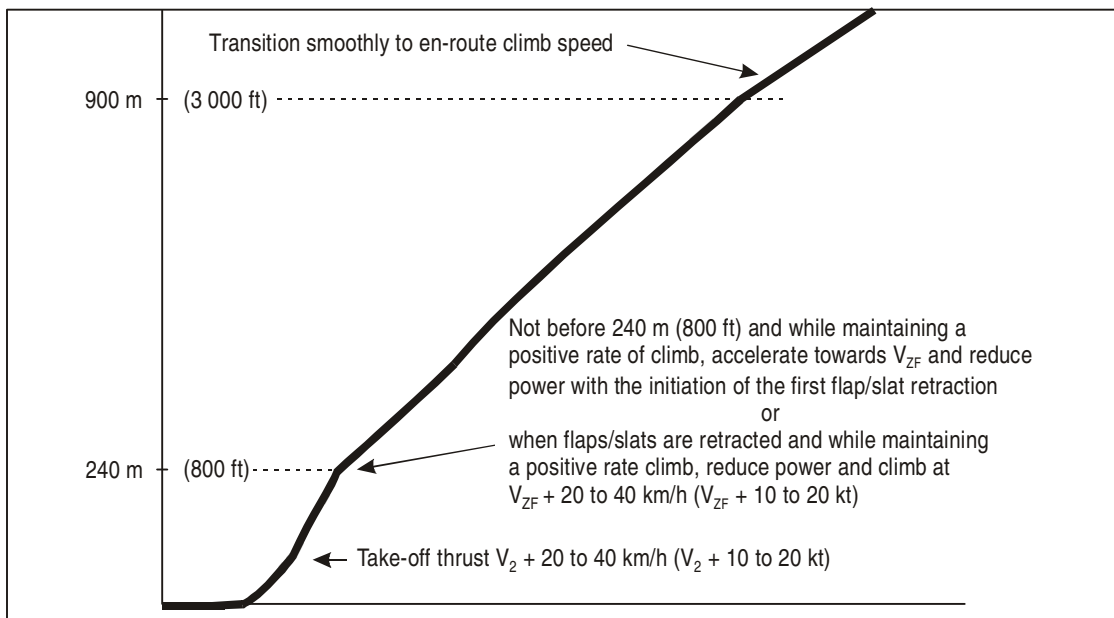


Figure I-7-3-App-2. Noise abatement take-off climb — Example of a procedure alleviating noise distant from the aerodrome (NADP 2)