

SECTION 1.11 ATPL PERFORMANCE AND LOADING (PL)

Unit 1.11.1 APLC: ATPL performance and loading – all aircraft categories – Reserved

Unit 1.11.2 APLA: ATPL performance and loading – aeroplane

1. Reserved

2. Take-off and landing performance

2.1 Terminology

2.1.1 Explain the following terms in the context of take-off and landing performance:

- (a) speeds:
 - (i) V_1 , V_R , V_2 ;
 - (ii) V_S and derivatives (for example, 1.3 V_S);
 - (iii) maximum rate and maximum angle climb speed;
 - (iv) V_{MCA} , V_{MCG} ;
 - (v) flap retraction speed schedule;
- (b) distances:
 - (i) TORR/TOGA, TODR/TODA, ASDR/ASDA, LDR/LDA;
 - (ii) balanced field length;
 - (iii) clearway, stopway;
- (c) weights:
 - (i) TOW/MTOW, LW/MLW, ZFW/MZFW;
 - (ii) basic operating weight;
 - (iii) useable fuel;
 - (iv) payload;
- (d) take-off segments:
 - (i) first, second, third and fourth segments;
- (e) pavement segments:
 - (i) LCN, CAN, PCN;
 - (ii) pavement concession;
 - (iii) wheel loading.

2.2 Theory – take-off performance

2.2.1 Runway:

- (a) derivation/basis of take-off distance;
- (b) derivation/basis of accelerate-stop distance:
 - (i) delay factors assumed;
 - (ii) use of reverse thrust;
- (c) derivation/basis of V_1 ;
- (d) concept of balanced field length;
- (e) clearways and stopways:
 - (i) function;
 - (ii) effect on V_1 ;
 - (iii) effect on TOW when runway-limited;
- (f) V_R and V_2 :
 - (i) interrelationship with V_1 ;
 - (ii) range of acceptable values;