

## DESIGN FEATURE ENDORSEMENT

### DFE1 Tail wheel aeroplane

#### 1 Unit description

This unit describes the skills and knowledge required to safely operate an aeroplane fitted with tail wheel undercarriage.

#### 2 Elements and performance criteria

##### 2.1 DFE1.1 – Taxi tail-wheel aeroplane

- (a) taxi a tail-wheel aeroplane in the prevailing aerodrome and surface conditions and weather;
- (b) operate engine on the ground and exercise propeller care;
- (c) perform brake checks;
- (d) perform flight instrument checks while taxiing;
- (e) maintain forward visibility;
- (f) maintain aeroplane within the taxiway limits;
- (g) anticipate and manage ground slope;
- (h) use minimum power to achieve desired performance and exercise propeller care;
- (i) adjust taxi speed to suit aeroplane type, surface conditions, congestion, maintain control and avoid collision with obstacles, and other aircraft;
- (j) interpret and comply with taxiway and other aerodrome markings or, in the absence of markings, the aircraft is maintained in the centre of the taxiway and at a safe distance from obstacles;
- (k) compensate for effects of wind velocity and high engine power using aircraft controls.

##### 2.2 DFE1.2 – Take-off tail wheel aeroplane

- (a) perform pre-take-off checks correctly;
- (b) line up aircraft in the centre of the runway in take-off direction and completes line-up checks in accordance with approved checklist;
- (c) apply take-off power fully, maintain aircraft aligned with centre of runway and maintain wings level;
- (d) raise tail to achieve minimum drag, ensuring the propeller is clear of the surface;
- (e) control yaw;
- (f) rotate at manufacturer's recommended speed to achieve planned climb performance;
- (g) adjust heading to maintain track along extended runway centreline;
- (h) configure aircraft for nominated climb profile and track on runway centreline;
- (i) perform after take-off checks from memory;
- (j) perform take-off into wind and cross-wind take-off.

##### 2.3 DFE1.3 – Land tail wheel aeroplane

- (a) select and identify aiming point;
- (b) land aeroplane at a controlled rate of descent, aligned with and above the runway centreline, within a specified area beyond a nominated touchdown point, without drift, maintaining directional control, and stop within the available runway length;
- (c) minimise and control ballooning and bouncing;
- (d) land aeroplane in the following profiles:
  - (i) main wheels and tail wheel simultaneously (3-point landing);

- (ii) wheel landing (main wheels only on touchdown);
- (iii) flapless landing;
- (e) perform after-landing checks correctly.

#### 2.4 DFE1.4 – Short take-off and landing

- (a) for short take-off, demonstrate the following:
  - (i) calculate take-off performance;
  - (ii) perform pre- and after-take-off, line-up and after-landing checks;
  - (iii) line up aeroplane to use maximum runway length;
  - (iv) apply take-off power fully before brakes (where fitted) are released and rotate aeroplane at manufacturer's recommended speed;
  - (v) set nominated climb speed appropriate to obstacle clearance requirements;
- (b) for short landing, demonstrate the following:
  - (i) calculate landing performance;
  - (ii) land the aeroplane at the nominated touchdown point at minimum speed and apply maximum braking;
  - (iii) touchdown simultaneously on main wheels and tail wheel;
  - (iv) control the direction of the aeroplane on the ground;
  - (v) stop aeroplane within calculated landing distance;
  - (vi) perform after-landing checks correctly.

### 3 Range of variables

- (a) activities are performed in accordance with published procedures;
- (b) day VFR;
- (c) approved aircraft fitted with tail wheel undercarriage;
- (d) aircraft with fixed or retractable undercarriage;
- (e) cross-wind, headwind or tailwind to the limits of the aircraft type;
- (f) sealed, gravel or grass runways;
- (g) simulated abnormal and emergency situations.

### 4 Underpinning knowledge of the following:

- (a) cross-wind limits for the aircraft type flown;
- (b) ability to calculate cross-wind components;
- (c) windsock indication interpretation;
- (d) take-off and landing performance;
- (e) take-off weight and centre of gravity calculation;
- (f) centre of gravity limitations;
- (g) gyroscopic effect during take-off;
- (h) slipstream effect during take-off;
- (i) direction of induced yaw when aircraft tail is raised;
- (j) causes of loss of control of a tail wheel aeroplane on landing.