APPENDIX R62.04
NATIONAL PILOT LICENCE
WEIGHT-SHIFT CONTROLLED MICROLIGHT AEROPLANES
PRACTICAL TRAINING

1. Aim of training course

The aim of the course is to train a candidate to the level of proficiency required for the issue of a category rating for weight-shift controlled microlight aeroplanes, and to provide the training necessary to act as pilot-in-command of any weight-shift controlled microlight aeroplane for which he or she holds a valid class or type rating, engaged in non-revenue flights under visual flight rules.

2. Practical training course

Exercise 1: Familiarisation with the weight-shift controlled microlight aeroplane

Aim: To become familiar with the component parts, controls and system of the aeroplane.

(1) Explanation of the weight-shift controlled microlight aeroplane and its characteristics;
(2) Cockpit layout;
(3) Systems;
(4) Check lists, drills, controls.

Exercise 1E: Emergency drills

(1) action in the event of fire on the ground and in the air;
(2) engine cabin and electrical system fire;
(3) system failures;
(4) escape drills.

Exercise 2: Preparation for, and action after flight

Aim: To understand how to prepare the aircraft and pilot for flight, and how to leave the aircraft after flight.

(1) Flight authorisation and weight-shift controlled microlight aeroplane acceptance;
(2) Serviceability documents;
(3) Required equipment, maps, etc.;
(4) External checks;
(5) Internal checks;
(6) Seat, harness and controls adjustment;
(7) Passenger briefing;
(8) Starting and warming-up checks;
(9) Power checks;
(10) Running down and switching off of engine;
(11) Parking, security and picketing (e.g. tie down);
(12) Completion of authorisation and flight folio sheets;

Exercise 3: Air Experience

Aim: The aim of this sequence is to instil confidence in a learner who has previously flown very little or not at all, to impart some knowledge, and to familiarise the

learner with the geography around the training base. This is also to introduce the student to flexi wing flight.

Exercise 4: Effect of controls

Aim: To understand how each control affects the aircraft in flight.

(1) Primary and secondary effects of bar movement backwards and forwards (pitch);
(2) Primary and secondary effects of bar movement left and right (roll);
(3) Primary and secondary effects of thrust;
(4) Effects of the following on wing controllability;
  (a) Airspeed;
  (b) Power changes;
  (c) Combination of thrust and pitch for instant attitude change;
  (d) Effect of change in weight;
(5) Airmanship.

Exercise 5: Taxiing

Aim: To safely control the aeroplane while manoeuvring on the ground in different wind conditions and on different surfaces.

(1) Pre-taxi checks;
(2) Starting, control of speed and stopping;
(3) Engine handling;
(4) Control of direction and turning;
(5) Wing control including wing tilting in confined spaces;
(6) Parking area procedure and precautions;
(7) Effects of wind and control of wing;
(8) Effects of ground gradient;
(9) Marshalling signals;
(10) Instrument checks;
(11) Air traffic control procedures;
(12) Airmanship (wing tip, prop-blast awareness and lookout).

Exercise 5E: Emergencies

Aim: To safely control the aeroplane while manoeuvring on the ground while dealing with an emergency

(1) Brake and steering failure;
(2) Throttle jamming.

Exercise 6: Straight and level flight

Aim: To attain and maintain flight in a straight line and at a constant altitude.

(1) At normal hands off trip speed, attaining and maintaining straight and level flight;
(2) Demonstration of inherent stability;
(3) Control in pitch;
(4) Demonstrate pitch/bank bar movement to counter turbulence;
(5) At selected airspeeds pitch and power, maintaining steady height;
(6) Flights at maximum level speed without pilot induced oscillations;
(7) Use of instruments for precision;
(8) Airmanship.

Exercise 7: Climbing

Aim: To enter and maintain a steady full-power climb and then return to level flight at a predetermined altitude, and to enter and maintain a steady cruise-climb.

(1) Entry, maintaining the normal and maximum rate climb and levelling off;
(2) Levelling off at selected altitudes;
(3) *En route* climb (cruise climb);
(4) Climbing with flap down;
(5) Recovery to normal climb;
(6) Maximum angle of climb;
(7) Maximum rate of climb;
(8) Use of instruments for precision;
(9) Airmanship.

Exercise 8: Descending

Aim: To enter and maintain a steady glide-descent and then, at a predetermined altitude, to return to level flight or to climb, and to enter and maintain a steady cruise descent.

(1) Entry, maintaining and levelling off;
(2) Levelling off at selected altitudes;
(3) Glide, powered and cruise descent (including effect of power and airspeed);
(4) Use of instruments for precision;
(5) Side-slipping (consideration of aircraft limitations);
(6) Airmanship.

Exercise 9: Turning

Aim: To enter and maintain a medium (up to approximately 30^o bank angle) turn whilst maintaining level flight and then to return to straight and level flight on a new predetermined heading. To enter and maintain a medium (up to approximately 30^o bank angle) turn whilst maintaining a climb or descent, or to enter and maintain a turn from a straight climb or descent.

(1) Entry and maintaining medium level turns;
(2) Resuming straight flight;
(3) Faults in the turn – (incorrect pitch, bank, balance);
(4) Climbing turns;
(5) Descending turns;
(6) Turns onto selected headings, use of either gyro heading indicator or compass;
(7) Use of instruments for precision;
(8) Judging bank angle by wing-tip reference;
(9) Judging bank angle by aerofoil reference;
(10) Recognising blind spots caused by the wing;
(11) Airmanship.

Exercise 10A: Slow flight

Aim: The objective is to improve the learner's ability to recognise inadvertent flight at critically low speeds and provide practice in maintaining the weight-shift controlled microlight aeroplane in balance should this situation occur while returning to normal airspeed.

(1) Safety checks;
(2) Introduction to slow flight;

(3) Controlled flight down to critically slow airspeed without losing or gaining altitude;
(4) Application of full power, adjusting for pitch and torque to achieve safe speed;
(5) Airmanship.

Exercise 10B: Stalling
Note: Instructors must use discretion in entering the stall with various wing types. Never enter with the nose more than 10 degrees higher than normal level flying attitude. Whip stalls are not to be demonstrated or encouraged. On the stall with high angles of attack do not use a wing drop recovery method, always maintain a level wing recovery method.

Grounds brief only the following:
In the event of a severe stall with a steep nose down attitude, recovery is with bar slightly forward, and enter a diving turn to bleed speed off.

(1) Airmanship;
(2) Safety checks;
(3) Symptoms;
(4) Recognition;
(5) Clean stall and recovery without power and with power;
(6) Recovery when a wing drops;
(7) Demonstrate response time with proper engine management.

Exercise 12: Take Off and Climb to Downwind Position
Aim: To safely take-off and climb the aeroplane to position on the downwind leg at circuit height.
(1) Pre-take-off checks;
(2) Into wind take-off;
(3) Holding centreline by wing banking and steering;
(4) Nose wheel and torque considerations;
(5) Crosswind take-off;
(6) Drills during and after take-off;
(7) Short take-off and soft-field procedures / techniques, including performance calculations;
(8) Undulating (rough field) considerations;
(9) Noise abatement procedures;
(10) Airmanship.

Exercise 13: Circuit, Approach and Landing
Aim: To fly an accurate circuit and carry out a safe approach and landing.
(1) Circuit procedures, downwind, base leg;
(2) Powered approach and landing;
(3) Nose wheel considerations;
(4) Effect of wind on approach and touchdown speeds;
(5) Turbulent approach and landing;
(6) Crosswind approach and landing;
(7) Glide approach and landing;
(8) Short-landing and soft-field procedures / techniques;

(9) Low and slow plus recover;
(10) Missed approach / go around;
(11) Noise abatement procedures;
(12) The hold off period and touch down;
(13) Control during ground run;
(14) Recovery from goose stepping;
(15) Airmanship.

Exercise 12/13E: Emergencies

(1) Aborted take-off
(2) Engine failure after take-off
(3) Mislanding / go around
(4) Missed approach

Exercise 14: First Solo

Aim: To carry out a safe and accurate solo circuit, approach and landing.

One circuit only. Then full stop.

The student must be briefed and checked out for first solo by a Grade A or Grade B instructor, and if possible is in full uninterrupted radio contact with the student during the entire first solo exercise.

Before flying solo a learner must:
a) in addition to being proficient in exercises 1 to 13;
b) be able to reasonably execute a simulated emergency landing from any position in the circuit;
c) He or she must also have completed a minimum of 6 (six) hours of dual instruction;
d) He or she must be the holder of a valid Student Pilot licence and have successfully passed the required exams.

During the next 3 hours of solo flight, the student must remain in the circuit, consolidating Exercise 12 and 13. The student must receive a dual check-out for each of these three hours, and, if possible, the supervising instructor must remain in full, uninterrupted radio contact with the student during this time.

Exercise 15: Advanced turning

Aim: To carry out a co-ordinated level turn at steep angles of bank and to recognise and recover from a spiral dive; and to avoid wake turbulence.

(1) Steep 360 ^{o} turns (45^{o} bank angle) maintaining altitude, recovering to straight and level flight;
(2) Steep descending turns (45^{o} bank angle), completing a minimum of 2 complete orbits, without engine power and without entering spiral dive, then recovering to straight and level flight;
(3) Wake turbulence / disorientation;
(4) Stalling in the turn and recovery and explanation of the hazards of thereof;
(5) Recoveries from unusual attitudes, including spiral dives;

(6) Airmanship.

Exercise 16: **Forced landing without power**

Aim: To carry out a safe descent and landing in the event of the engine failing during flight.

(1) Forced-landing procedure;
(2) Choice of landing area, provision for change of plan;
(3) Gliding distance;
(4) Descent plan;
(5) Key positions;
(6) Engine cooling;
(7) Engine failure checks;
(8) Use of radio, Mayday call;
(9) Passenger briefing;
(10) Engine restart procedures;
(11) Base leg;
(12) Final approach;
(13) Landing;
(14) Actions after landing;
(15) Airmanship.

Exercise 17A: Low level flying

Aim: To safely operate the aeroplane at heights lower than those normally used.

(1) Safety considerations and the risks and dangers of low flying;
(2) Selection of the appropriate speed;
(3) Awareness of the danger factors and their recognition;
(4) Transition to low level flight;
(5) Control of speed and height;
(6) Following ground contours;
(7) Effect of drift;
(8) Effect of wind on ground speed;
(9) Emphasis on regulations governing low flying.

Exercise 17B: Precautionary landings

Aim: A precautionary landing is one not contemplated before the flight commenced and where engine power is still available, enabling the pilot the opportunity of selecting and inspecting a suitable landing area before executing a landing in an unfamiliar place.

(1) Occasions necessitating;
(2) Full procedure away from aerodrome to break-off height;
(3) In-flight conditions;
(4) Landing area selection -
    (a) Normal aerodrome;
    (b) Disused aerodrome;
    (c) Ordinary field;
    (d) Habitation for after-landing assistance;

(5) Inspection of landing area;
(6) Circuit and approach;
(7) Passenger briefing;
(8) PAN call;
(9) Actions after landing;
(10) Airmanship.

Exercise 18A: Navigation

Aim: To fly accurately and safely in VMC under VFR a predetermined route as per CARS requirements, without infringing the rules governing regulated airspace.

(1) Flight planning;
- (a) Weather forecast and actual;
- (b) Map selection and preparation;
  - (i) Choice of route;
  - (ii) Controlled airspace;
  - (iii) Danger prohibited and restricted areas;
  - (iv) Safety altitudes;
- (c) Calculations;
  - (i) Magnetic heading(s) and time(s) *en route;*
  - (ii) Fuel consumption;
  - (iii) Mass and balance;
  - (iv) Mass and performance;
- (d) Flight information;
  - (i) NOTAMS etc.
  - (ii) Radio frequencies;
  - (iii) Selection of alternate aerodromes;
- (e) Aeroplane documentation;
- (f) Notification of the flight;
  - (i) Pre-flight administrative procedures;
  - (ii) Flight plan form;

(2) Departure;
- (a) Organisation of cockpit workload;
- (b) Departure procedures;
  - (i) Altimeter settings;
  - (ii) ATC liaison in controlled / regulated airspace;
  - (iii) Setting-heading procedure;
  - (iv) Noting of ETAs;
- (c) Maintenance of altitude and heading;
- (d) Revisions of ETA and heading;
- (e) Log keeping;
- (f) Use of radio;
- (g) Use of nav aids (if applicable);
- (h) Minimum weather conditions for continuation of flight;
- (i) In-flight decisions;
- (j) Transiting controlled / regulated airspace;
- (k) Diversion procedures;
- (l) Lost procedure;

(3) Arrival, aerodrome joining procedure;

(a) ATC liaison in controlled / regulated airspace;
(b) Altimeter setting;
(c) Entering the traffic pattern;
(d) Circuit procedures;
(e) Parking;
(f) Security of aeroplane;
(g) Refuelling;
(h) Closing of flight plan, if applicable;
(i) Post-flight administrative procedures;

(4) Airmanship.

18B: Navigation at lower levels and in reduced visibility

Note: This is not to be accepted as standard cross country technique. The student should know to avoid situations where it may be encountered.

(1) Actions prior to descending;
(2) Hazards (e.g. obstacles, other aircraft);
(3) Difficulties of map reading;
(4) Effects of wind and turbulence;
(5) Vertical situational awareness (avoidance of controlled flight into terrain);
(6) Avoidance of noise sensitive areas;
(7) Joining the circuit;
(8) Bad-weather circuit and landing;
(9) Airmanship.

18C: Navigation with GPS

(1) Entering weigh-points;
(2) Reading GPS information;
(3) Following GPS routes;
(4) Practical limitations.

Exercise 19: Use of instruments during flight

Aim: To develop the habit of checking constantly both navigational and engine instruments in flight whilst keeping a good look-out for other aircraft.

(1) Navigational instruments;
(2) Engine instruments;
(3) Scanning techniques;
(4) GPS and other basic electronic navigation systems.